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PSYCHE

VOLUME XL
NUMBER 4
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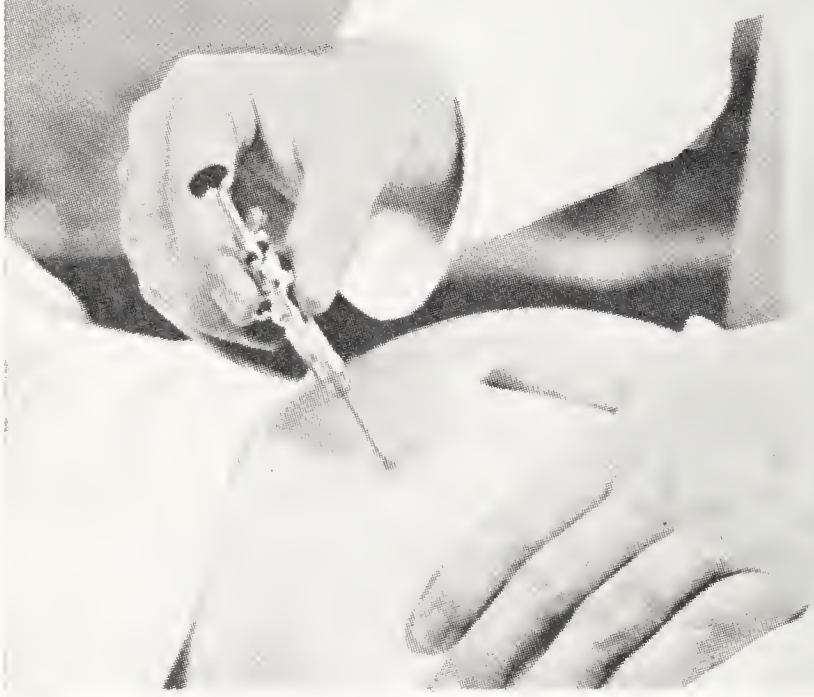

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1. R. Lamb and E. S. Maclean, Penicillin V—A Clinical Assessment After One Year, *Brit. M. J.* July 27, 1957, p. 191-193. **2.** J. I. Burn, M. P. Curwen, R. G. Huntsman and R. A. Shooter. A Trial of Penicillin V. *Brit. M. J.*, July 27, 1957, p. 193. **3.** J. Macleod, Current Therapeutics, *The Practitioner*, 178:486, April, 1957. **4.** W. J. Martin, D. R. Nichols and F. R. Heilman, Observations on Clinical Use of Phenoxymethyl Penicillin (Penicillin V), *J.A.M.A.*, p. 928, March 17, 1956.

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THE COVER

Psyche: the human soul; also the mind; the mental life.

The baekground is made up of a small part of our society: people of various ages and from all walks of life. Each is a separate entity with specific ambitions, loves and fears . . . . a manifestation of his or her hereditary, physiological eonstitution and accumulated social experienee. Superimposed on the street seene is Dr. Stokes' working schema of a healthy human being with equilibrium existing on either side of the Ego boundary. Should there be an imbalance at *any* level, mental illness might well result.

D.P.A.

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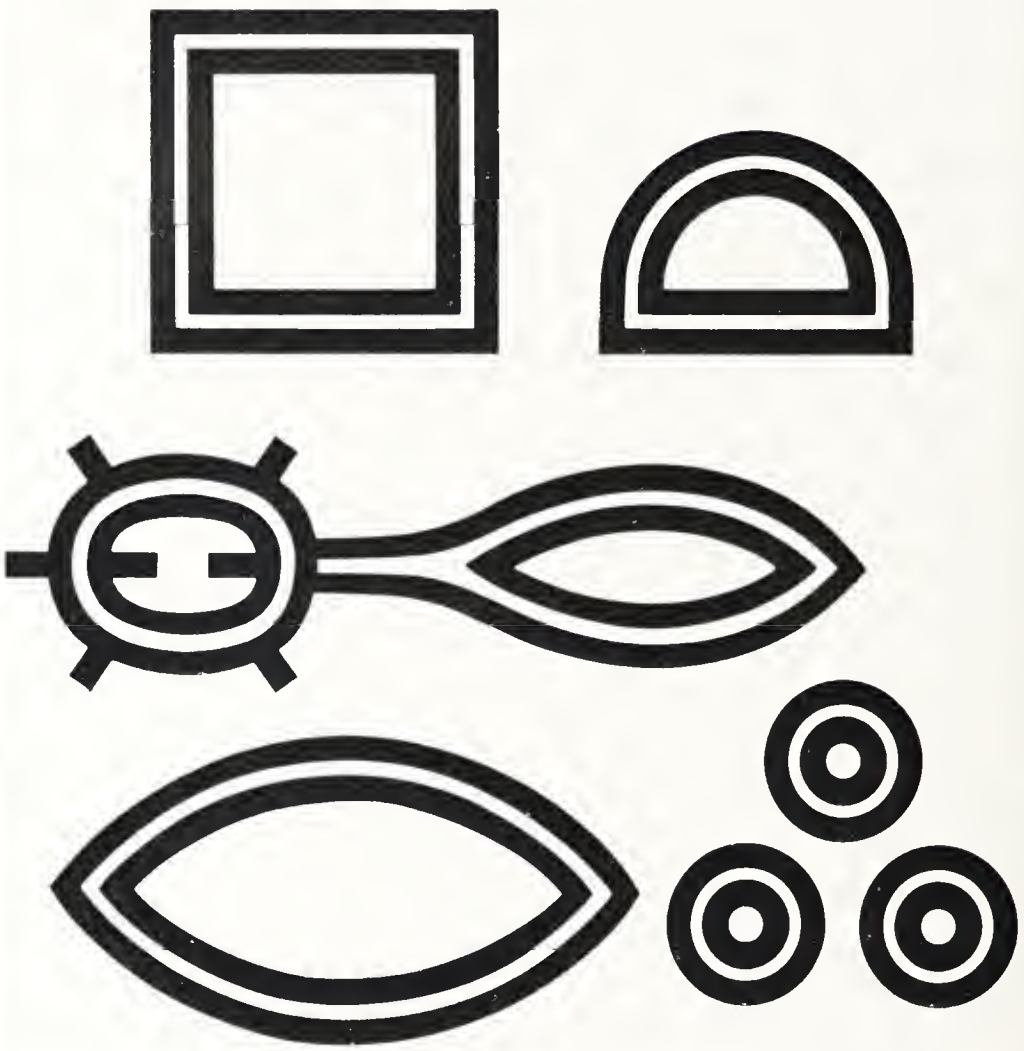

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Editorials

PSYCHE

The study of psychiatry is important not only to general medicine but also to the solution of social problems of everyday life. We now fully realize that mental illness can no longer be regarded as the realm of a few specialists but is within reach of the general practitioner, and indeed an essential part of his training. It is obvious that this view ranks high in the thinking of the Canadian Medical Association as there is talk of making psychiatry a Council examination.

In recent years there has been an increasingly greater demand from the general public for more information concerning his psyche. Thousands of books and many movies on the topic of emotional and mental problems have been released and avidly devoured by professional as well as laymen. This relatively new knowledge has found widespread application in the fields of psychology, vocational counseling and guidance, education, ministry, parole boards, courts, and correctional institutions.

Consequently the treatment of mental illness is rapidly changing. Whereas in the "dark" ages the insane were kept in chains and isolated and often brutally treated, today there are drugs which can control the patient's behaviour such as to be acceptable to society. The reform in therapy has been long slow, going through the stages of chains to the abolition of restraints to the hospital period to the social and outpatient period. This new therapy however requires tolerance and understanding of mental illness, and much hard work by the community in order that it succeeds. Mental disease must be regarded in the same light as pneumonia or any other organic disease before we can entirely erase its stigma from society.

It is hoped in this issue to bring out some of the more important aspects of psychiatry and to stimulate the reader into further study of this complex but most interesting and useful subject.

R.L.

SPECULATIONS

A man holds a brain — Perhaps this photograph, with a glimpse of the future, is symbolic of man's mastery over the mysteries of mind. Even Freud envisioned this eventual outcome in his statement that "psychoanalysis is actually a superstructure which, eventually, will have to be put on its organic basis."[4] Psychotherapy is only a stop-gap of symptomatic relief for patients who will eventually be treated on a physical-chemical basis.

Many lines of inquiry have been postulated in the search for the organic bases of mental diseases. The biochemical approach is one which may be fruitful, especially in schizophrenia.[1,2] The study of biochemical changes in mental diseases, the metabolism of the hallucinogenic agents, the biochemistry of the neuroamines, and the mode of action of the psychoactive drugs are all

topics for research.[3,5] Serotonin, norepinephrine and other neuroamines are undoubtedly a part of the answer. It would be simple if *high* neuroamine levels produced manic phases or euphoria (action of monoamine oxidase inhibitors), *low* neuroamine levels produced depression (action of reserpine), and *abnormal* neuroamines (like adrenochrome[2]) produced schizophrenia. However, extremely complex mechanisms are involved.

Genetic factors may also be at work. 86% of monozygous twins with schizophrenia have a similarly affected twin.[1] This feature may be an inborn error of metabolism like PKU, or may be a genetic predisposition. Other diseases like alcoholism or compulsive eating may be symptoms of an attempt on the part of the patient to correct a faulty metabolism.

Man is a biological entity, and as such, mind and mental illness should be considered as biologial phenomena. Perhaps the brain and hand pictured above symbolize the similarity of body and mind; that the physiology of bone, muscle and skin in the hand are analogous to the physiology of mind in the brain.

J.D.G.

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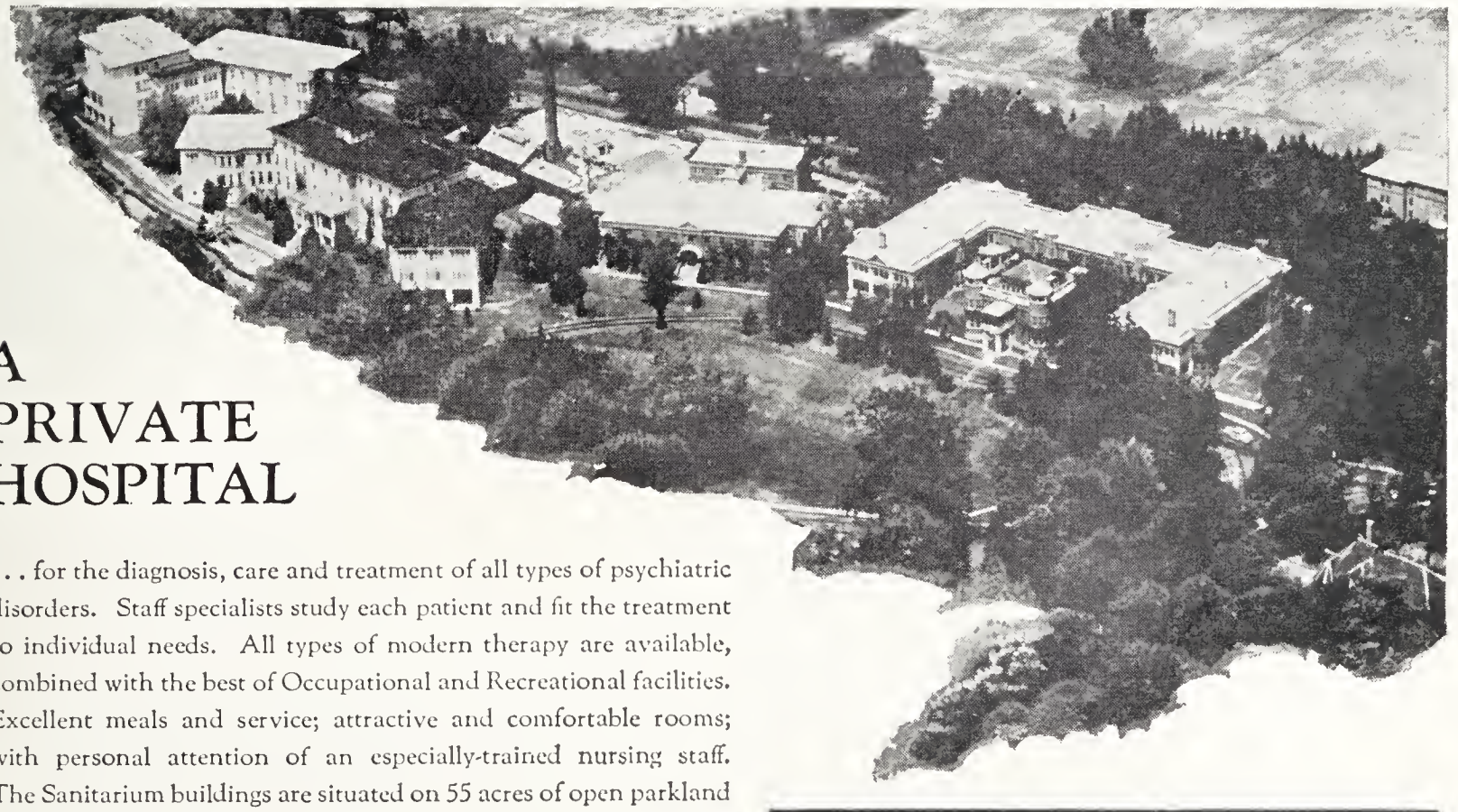

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The Neurological Basis of Psychiatric Disorders

Richard M. Gladstone 6T4

The relationship between mental dysfunction and organic brain disease is explored and illustrated, especially in the areas of limbic lobe and sensory system pathology.

It has been reported that in 50% of hospitalized mental patients there are organic changes present within the brain. Some people may show gross defects of brain structure with few or no obvious mental abnormalities. Many may live a normal existence or even attain fame, as did a young girl afflicted with porencephalus, who at the age of 12 was known all over Eastern Europe for her ability in clairvoyance and mental healing. It is also interesting to note that many people have died whose brains and whose serology have been grossly paretic, but they were symptom-free during their lifetime.

Not all patients with mental disease are hospitalized. If we include the large number of mentally retarded, we find that three-fifths of mental disturbances are organic. In the last few decades there have been many instances where psychiatric illness, previously ascribed to psychological and social causes, has been found to have a structural basis.

In 1925, 1 out of every 3 male mental patients had General Paresis of the Insane. Since that time there has been a steady decline due to (1) the fever treatment, (2) national campaigns against syphilis, and (3) introduction of penicillin. In 1877, v. Kraft-Ebing, a famous Viennese professor of psychiatry gave the following as causes of G.P.I.:

dissipation in alcohol and love
heredity
smoking of 10-20 Viennese cigars
exhaustion of making a living
weak nerves and fright
menopause

Among the first people with G.P.I. described by French psychiatrists were soldiers of Napoleon. In these it was speculated that the terrors of war were the precipitating factors.

In 1898 the famous cellular pathologist Virchow, denied before the Berlin Medical Society that syphilis could be the underlying cause. Then with the shift of diagnostic emphasis from the clinic to the laboratory, came new evidence. In 1904, Alzheimer and Nissl, using new methods of staining, gave a detailed description of the microscopic changes in the brains of patients with G.P.I. In 1906, the Wasserman reaction was introduced. This showed that in almost all cases the blood and C.S.F. was positive for syphilis. Then, in 1913, the long-awaited event came. Noguchi and Moore found Treponema pallidum in the brains of those with G.P.I. Until 1917, when Wagner and Jauregg introduced malariotherapy, G.P.I. was fatal. With this treatment, 50% were benefited, ranging from arrest of the disease to complete recovery. With our modern drug, penicillin, our results are a slight improvement on the malarial treatment.[1]

The Mind-Body Relationship

In considering the relationship between mental dysfunction and structural change in the nervous system, it is necessary to ask the question, "What is the relation between the mind and the body?" Historically, *Plato* described a *Tripartite soul* which he localized in the marrow or the parenchyma of the cerebrospinal tissue. The cranial cavity (partus supremus) contained the divine part of the soul—for intellect and reason, sensation and body motion. He said it resembled the earth in shape. The baser parts (partus infimus) concerned with appetites and desires, were located low down in the spinal marrow, behind the abdominal and pelvic cavities. The diaphragm "caged" the lowliest soul and kept it out of harm's way. The partus medius subserved the emotions and was located behind the thoracic cage. The neck was regarded as an isthmus which kept the emotions within earshot of reason.[2]

This view was carried on down through the centuries in a modified form. Descartes and Kant expanded it into a theory of *Parallelism*. The Cartesian position regarded the mind as an entity, which differed in kind from the body, though interacting with it. This Dualistic view has been discarded by some modern philosophers because of the difficulty in explaining the interaction between perception and willed acts. But some scientists, notably Sherrington and Lord Adrian ad-

hered to it, because they believe that the mind is not yet explicable in physical terms.

With the advent of Mechanism came the trend to interpret the mind and mental phenomena in material terms. Since mental activity is a fact, it must have a natural explanation. It was be reduced to the laws of matter and operate according to the laws of cause and effect. Tyndall viewed the mind as "emergent" and stated, "as bile is the secretion of the liver, so mind is the secretion of the brain." He regarded it as an effluence of the body structure. In this view the mind is a highly refined and attenuated form of matter, a sort of halo surrounding the brain.[2]

Piaget criticized this view and states that anything that produces activity must use energy. Consciousness is not a substance nor a form of energy and the laws of conservation of energy cannot be applied to the mind. The most recent view is to regard the mind and the body as two aspects of the same thing, in the same way that convex and concave are just two different ways of looking at the same thing. This is the *Holistic* point of view. Closely allied to this is the position of the *Monist* who said that the word "mind" is an abstraction used to denote a supremely important part of the cerebral function. Mind is the integration of all cerebral activity and the relationship of one part to another. It is as much a function of the brain as contraction is a function of muscle, but so complex that it is difficult to comprehend.[4]

Changing Trends in the Literature

In 1962, Brady published a paper in the American Journal of Psychiatry dealing with the changing trends in the type of articles submitted to the main psychiatric journals for publication. He divided articles dealing with the etiology of the different psychiatric diseases into two main groups — those concerned with "psychosocial factors" and those which dealt with "genetic-organic factors". He showed that there was an inverse relationship between these two groups; as one increased, the other decreased. Since 1945 there has been a steady increase in the number of contributions in the genetic-organic field and a substantial decline in those publications dealing with phychological factors.[5]

While this does not prove that more of psychiatry is due to organic disease of the nervous system, it does prove that the interest in discovering underlying organic pathology has increased, and these efforts have been rewarded. For example, Phenyl pyruvic ologophrenia is known now to be due to an enzymatic defect, and is treatable.

The Visceral Brain (Limbic Lobe)

Mental illness in general is composed of aberrations in one or more of 3 spheres, namely, thinking, feeling and behaviour. If we deal for a moment with the feelings or emotions, it will be pointed out how the structural lesions in the parts of the brain concerned with these functions can lead to the psychiatric symptomatology which is familiar to us.

The central forces of emotion are built up in the hippocampal formation, and are carried to the mammillary bodies, the anterior thalamic nuclei and the cortex of the cingulate gyrus which is the receptive area for experiencing emotion. Radiation of the emotive process to other regions in the cortex adds emotional coloring to the psychic process. The hypothalamus is the main center for meditating emotional expression but it does not share in experiencing emotion. Only the cerebral cortex is capable of appreciating all the various affective qualities of experience and combining them into such states as fear, anger, hate and love. This anatomical circuit, formerly called the rhinencephalon, is now called the "visceral brain." It is designed to process the important information about food, danger, sex, and then to move the body effectively: to seek nutrition, survival or procreation. This area has also been shown to be necessary for wakefulness and vigilance. Lesions in the visceral brain impair not only the primordial adaptions but also retard general intellectual development, and the main symptoms are those relating to the emotional behaviour of the individual.[6,7]

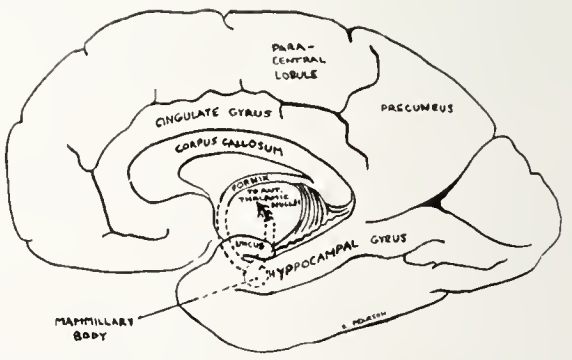

Figure 1. The anatomy of the visceral brain.

Rabies. This is a disease with a predilection for the hippocampus and cerebellum. The patient is subject to anxiety, apprehension and paroxysms of rage and terror.

Epilepsy. Hughlings Jackson associated the dreamy state of epileptic automatism to "discharging lesions" in the region of the uncus. Penfield and Rasmussen describe an "incisural sclerosis" in the area of the uncus and hippocampus. The large group of epileptics were formerly regarded as idiopathic until the under-

lying pathology was discovered. The lesions are due to small hemorrhages which occur with a tear in the tentorium during passage through the birth canal.

Korsakoff's Psychosis. The *temporal lobes* are also known to be related to memory. C. and O. Vogts observed that the temporal lobes were extremely large in a man known to have a phenomenal memory. Penfield later showed that the application of electrodes to the cortex of the temporal lobe could revive vivid memories from the past. Stimulation of other parts of the cortex produced no such reaction. These studies are important in understanding the pathology of a psychiatric condition known as Korsakoff's Psychosis. It is caused by a deficiency of thiamine (vitamin B) and is characterized by a disorder of recent memory with confabulation for the amnestic periods. The lesions have been accurately localized to the periventricular areas of the hypothalamus and to the mammillary bodies. There is an interruption to the mammillothalmic tract and the fornix. Dr. Olszewski points out that just because the function of memory is disturbed by these lesions, it does not mean that the memories are stored there.[8]

Tumours. It has been shown that tumours of the corpus callosum impinging on the cingulate gyrus often produce personality changes, loss of affect and varying degrees of somnolence and stupor.

Nymphomania. From the diagram (above) we can see that the cingulate gyrus broadens out into the precuneus which is contiguous with the sacral representation in the paracentral lobule. Papez noted that the precuneus shows a greater difference in size in the two sexes than any other part of the cortex, being more highly developed in the male. He suggested that representation of the sex organs may be located here. This theory has gained considerable support from the famous case of Erickson's who described a 55 year old woman who had suffered from nymphomania for 10 years. She was found to have an hemangioma of the R. paracentral lobule edging into the precuneus.

Psychic Blindness. The famous experiments of Klüver and Bucy in regard to temporal lobe ablations indicate further how disturbances of the visceral brain can produce changes in emotional behaviour. If, from a monkey, they removed one temporal lobe, or made bilateral lesions sparing the rhinencephalon, there was no significant change in the animal's behaviour. However, bilateral lobectomy on formerly wild and intractable animals produced monkeys that were docile and calm, and showed neither fear nor anger. They would not fight or retaliate when abused by other animals and obviously would not have lasted long in their natural habitat. These monkeys developed "psychic blindness" in that they could not discriminate between objects that were useful or those which were potentially dangerous. Anything that captured their attention they would mouth, and if it was not edible, it would be discarded. They could not recognize the object if offered again and they would go through the same procedure. These animals became oversexed and showed bizarre oral-sexual behaviour.[9]

Rage Reactions. It has been discovered that rage reactions can be produced by lesions in the amygdala, hippocampus, fornix and olfactory tubercles.

Emotions. The cingulate gyrus has been recognized as an important autonomic center. In the light of the bearing of emotions in asthma, it should be noted that the anterior part of the cingulate gyrus (area 24) can exert a powerful vagal effect on respiration and a considerable rise in blood pressure upon stimulation in the dog and monkey. Area 24 sends impulses by way of the caudate to the thalamus which block spontaneous thalamo-cortical activity and cause a suppression of electrical activity of the cortex. Ward has shown that area 24 can, through its connections with the reticular substance in the brain stem, inhibit all motor activity. This mechanism suggests a possible explanation of how intense emotion can paralyze thought and action.

Psychosomatic Illness. The visceral brain has sometimes been called the limbic lobe. We have seen that it is connected by strong reciprocating pathways with the hypothalamus. It acts as a unit to integrate afferent impulses from the viscera and to influence autonomic behaviour and visceral activity. This has profound significance for the etiology of some of the psychosomatic illnesses. It has been found that upon stimulation of specific loci, notably the antero-medial part of the limbic lobe (the amygdala) in cats, that there is a marked increase of pepsin, HCl acid and the volume of gastric juice. In some cases, actual erosion, hyperemic patches and frank hemmorhages were found in the gastric mucosa. These observation have obvious implications in the genesis of peptic ulcer.[10]

Stress Reactions Experimental results show that the visceral brain is also implicated in the maintenance of a normal diurnal rhythm of ACTH secretion, and so may be involved in stress reactions. Chapman found an 80mmHg systolic increase in blood pressure on stimulating the fronto-temporal region in man. A similar rise in pressure has been recorded after stimulating the mammillary body in a cat.

Lobotomy. It must be noted that it is a result of limbic involvement that changes in affective behaviour

are produced following lobotomy procedures.

This review of neuro-anatomy and presentation of experimental evidence clearly points out that specific types of phychiatric illnesses are definitely connected with structural or organic abnormalities. However, in some other types of psychiatric disorders, the relationship between brain damage or alteration and mental dysfunction is not apparent. I am referring now to the endogenous psychoses, principally schizophrenia and manic-depressive psychosis. The search for changes in the anatomy, physiology or biochemistry of the brain is occupying the forefront of psychiatric research today. However, there may be no organic cause for these diseases, but the evidence suggests that someday one shall be found. The great push forward is in this direction for good reason, because 1 out of every 5 hospital beds in the western world is occupied by a schizophrenic.

Kraeplin held that the glands, possibly the gonads produced a poison that affected the brain. Bleuler believed this too, but with reserve. Carl Jung seceded from Freudian psychoanalysis in 1913 largely because he could not support Freud's view that schizophrenia was due to difficulties in early childhood. Jung believes in a toxin-X whose secretion is somehow connected with emotion. In later years Freud changed his mind and spoke of curing schizophrenia with a syringe.[11] Meanwhile no-one has been able to find toxin-X, and the search for a brain poison continues.

Disturbances of Sensory Input

Turning now to another aspect of the nervous system, namely sensation, we shall see that abnormalities here can produce bizarre psychiatric symptoms. Experience and observation indicate that certain isolated and immobilized medical and surgical patients develop psychotic manifestations, from silence, darkness and loneliness. Psychotic episodes may also occur following amputation, paraplegia, after covering of the eyes—black patch delirium. The newest information maintains that monotony may be as damaging as trauma, and a concept of heterostasis has been added to Cannon's original idea of homeostasis. Hebb has shown that a constant sensory bombardment is essential to the activity of the ascending reticular activating system (ARAS) upon which normal brain function depends. This may account for the impairment of brain function in a monotonous and unchanging environment. It may also be relevant to the technique of indoctrinating prisoners — or brainwashing — which amounts to impoverishment of the person's sensory life.

The initial studies in this field were carried out by Hebb at McGill. He showed that if a normal person was kept in a dark, quiet room room for 3-36 hours, the effects (depending on the personality of the subject) varied from mounting anxiety, to fear, resentment, rage and quasi-psychotic states with depersonalization and disorientation with or without hallucinations and delusions. The trauma results not solely from the sensory deprivation because buzzers may sound loudly and lights may shine brightly and continuously, but also from the devastating feeling of impotence to derive any meaning from the environment. Deprivation of sleep or of dreaming may also produce a similar disorientation and disturbance of judgment and action. It has been found that an information overload may be as damaging as an information underload. Communictions engineers equip their computers with automatic fuses that protect their mechanical brains from energy input above efficient tolerance. Our own physiologic cutouts are comparatively ineffective—our eyelids, stapedius muscle or total body escape. Miller has shown experimentally that when a person is exposed to an overload of incoming information, and expected to perceive, process and respond to it, he may react in a manner that varies from normal to psychotic.

It has also been noted that information is received in an unaccustomed way or in an unpredictable space-time context, our orientation may be impaired, eg. the feedback of your own voice or videotaped image after a 0.2-0.5 sec. delay may cause dysmnesia, stuttering, ataxia or more serious neurotic or pseudo-psychotic states.[12]

Conclusion.

It should be evident now that there is an increasing tendency to focus more on the organic side of psychiatry which recently has led to the development of biological psychiatry. It is the hope of all researchers that once the pathology of the various illnesses is known these will become preventable or curable. I believe that the greatest strides forward will soon be made in the fields of neuro-chemistry and biochemistry. As psychiatry is becoming more scientific the cloak of mystery which previously surrounded mental illness is becoming dispelled, enabling the medical practitioner to treat mental disease earlier and more effectively.

ACKNOWLEDGEMENT

The author wishes to thank Dr. J. A. Walters, Toronto General Hospital, for the use of his personal library and for his encouragement and guidance. Thanks also to Dr. J. C. Deadman, Toronto Psychiatric Hospital, for his advice and direction.

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Profiles

Dr. J. W. A. Duckworth

Dr. Duckworth was born in Chester, England, in 1912. There was no background of medicine in his family, and it was only during his early education at Harrow School that his aim swung around first to the sciences, and among these, medicine. This he studied at the University of Edinborough where he graduated in 1936 with a M.B.Ch.B. and a great interest in anatomy. He served his internship at the Royal Infirmary and at the Simpson Memorial Maternity Hospital in Edinborough.

With the signs of war emerging, he joined the Royal Naval Reserve in 1938 as Surg.Lt. He began his tour of duty with the commencement of hostilities, and became Surg.Lt.Cdr. four years later. He served on aircraft carriers and cruisers, and saw action many times, including the night bombardment of Cherbourg, the attacks on the battleship Tirpitz and numerous convoy escorts on the North Atlantic. As a naval doctor his practice consisted of surgery, mainly of burns and trauma, and a regular general practice restricted to males, with particular emphasis on skin diseases, and even some epidemic diphtheria. During his service he received five medals, and was awarded the Volunteer Reserve Decoration in 1952. He is still in the naval reserves and presently holds the rank of Surg. Capt.R.C.N.R. and is the Principal Medical Officer at H.M.C.S. York.

Following demobilization in 1946 he returned to the University of Edinborough Department of Anatomy, commencing as a lecturer and passing through three grades before coming to Canada. During that time he organized the teaching of Histology and lectured in Embryology and Anatomical Histology. His research work was mainly concerned with the heart and its development. He received the Gold Medal for his M.D. Thesis in 1952. Among his many findings, one of significant interest and value was the fact that the conducting system remains primitive until birth when metamorphosis takes place, perhaps under the necessity of adjustment by the heart to various stimuli not encountered in intrauterine life.

In 1952, at the request of Dr. Grant, he moved to Canada with his wife and two children, and joined the Medical Faculty at this University as Associate Professor. He became full Professor and Head of the The Department of Anatomy in 1956.

Apart from medicine, Dr. Duckworth's interests cover an enviably extensive range. In his reading he is the Medical Historical Society of Toronto. He sails, particularly keen on naval history and is a member of skis, hikes and climbs, enjoys travel, and is fond of wood working and wood finishing. In addition, both he and his wife do Scottish Country Dancing. The same enthusiasm that he displays for all these activities is quite evident in the anatomy laboratories, and it is extremely infectious. Those he has worked with — and there are many for he spends much time with the students — will never forget his example.

Jarda Polak 6T4

Continued from page 140

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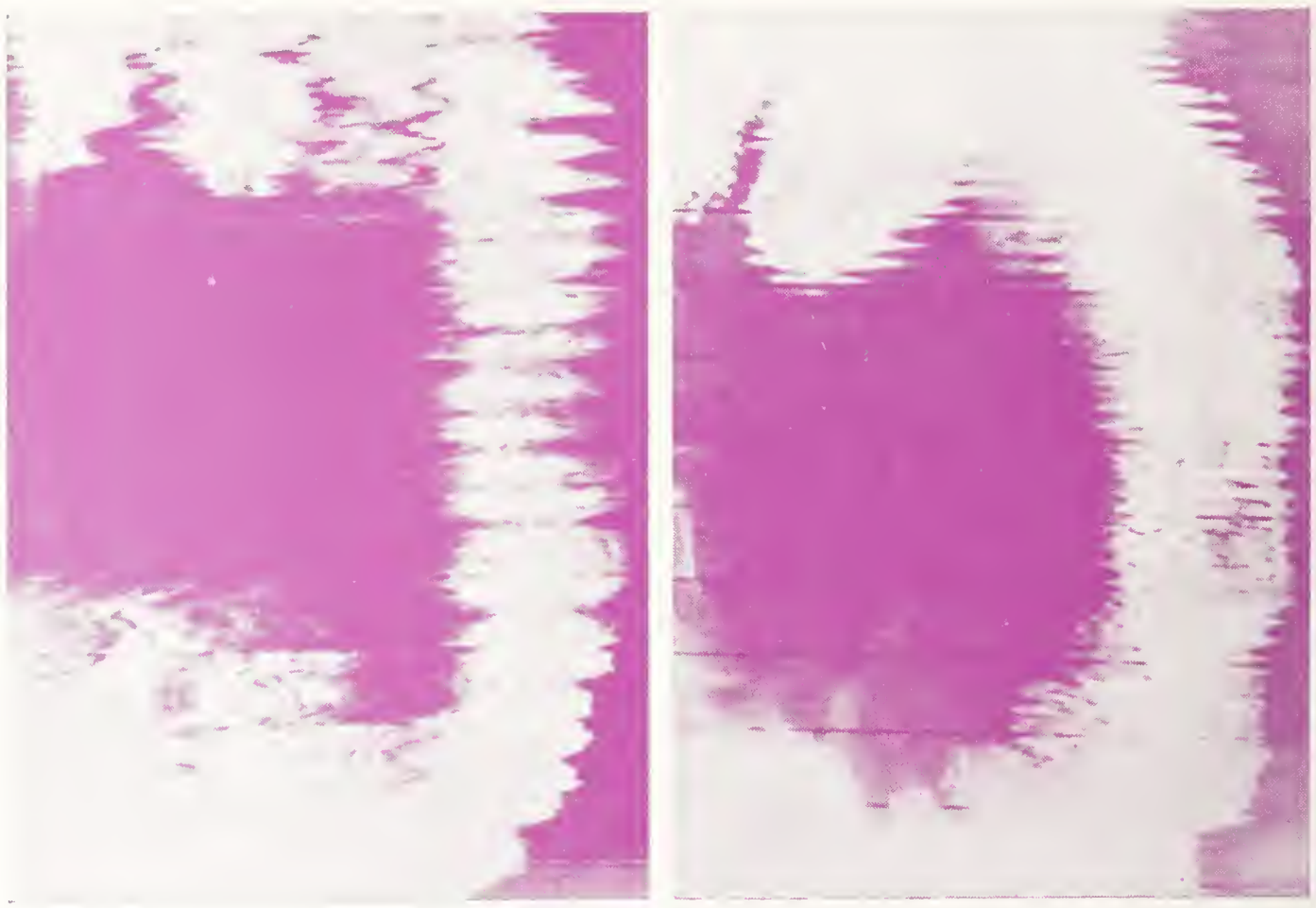

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Book Reviews

Principles of Internal Medicine; T. R. Harrison et al., Ed. Fourth Edition, 1962. McGraw-Hill Book Company, Inc. 1947 pages. $21.50.

The aim of this book, according to the editors, is to "remain abreast of medical teaching" and to be concerned "not with mere 'what' but more especially with the 'why' of disease". To this end the latest edition has been extensively revised and rearranged. It is longer because of the insertion of new sections and the expansion of previous ones in the light of new knowledge. For example, the articles dealing with virus diseases are rearranged and expanded in a reflection of recent developments in the detection and classification of viral agents. Mycotic and protozoal diseases are discussed more fully also. One section has, unfortunately, been omitted; this dealt with common complications in the course of treatment and their management. It was useful and will be missed.

Little need be said about the merits of this book to those who are familiar with the third edition. It contains topics of interest to every medical man but it is especially valuable to undergraduates in medicine in that it is a comprehensive survey of material ranging from signs and symptoms to rare disease entities. In spite of this broad range most topics are very adequately covered. Illustrations in the form of photographs, diagrams and X-ray reproductions are used often but they never replace the text which is, on the whole, remarkably well-written and easy to read.

The book is divided into eight major parts such as "Cardinal Manifestations of Disease" and "Diseases Due To Biological Agents". These in turn are subdivided into sections comprised of articles by various authors dealing with specific topics. In most sections care has been taken to include a classification of the topics discussed in order to orient the reader; these are excellent. This orderly arrangement is continued throughout the articles and they are also arranged according to topics such as incidence, signs and symptoms, pathology. The index, in spite of the revision and rearrangement, is accurate and complete.

In summary, this book is a well-written, carefully-organized general medical reference which can be of great value to all medical undergraduates and graduates.

K.A.O.

French's Index of Differential Diagnosis; A. H. Douthwaite, Ed. Eighth edition, 1960. John Wright and Sons Ltd., Bristol; in Canada, The MacMillan Company of Canada, Ltd. 1111 pages, illus. $22.70.

There are at least two approaches to the study of medicine. The narrow-angle method studies individual diseases and their classical signs and symptoms. The wide-angle method studies the signs and symptoms in a clinical situation and develops the diseases in a reverse process. The narrow-angle or academic method is probably better for outlining specific treatment for a given disease, but the wide-angle method is practical, and preferable when the diagnosis is in doubt.

Most medical books produced these days are concerned with a specialized topic, many being specialties of specialties. Very few books employ the wide-angle method mentioned above. It is therefore a rare treat to come across a book like *French's Differential Diagnosis.* When other medical books are becoming more and more limited in scope, *French's* still covers the field of medicine, surgery, gynecology, ophthalmology and other specialties. Thus, the book does a great deal to break down compartmentalized thinking which results from the specialist-oriented approach in most medical schools.

The book includes a listing for each of the main symptoms and explains all of the important diseases and some of the less important in these sections. An index at the back lists all the diseases mentioned in the text, collecting all related symptoms. Illustrations are included where appropriate, many of them in colour.

The new *French's Differential Diagnosis* is recommended for all medical personnel. Specialists may relate their particular field to others. General practitioners will find that several changes have been made since their 1954 edition. Students will find *French's* especially valuable — for the wide-angle view of medicine and for common oral exam questions such as clubbing, hematuria and even ulcers of the tongue.

J.D.G.

Abstract

Fibromyomatous Erythrocytosis, New England Journal of Medicine, Vol. 267, July 12 1962.

A case is described of secondary polycythemia associated with uterine fibroids. Following hysterectomy normal haematologic values were restored.

F.L.

Psychopharmacology

Carol J. Koladich 6T3

The CNS depressants and anti-depressants, which have significantly altered the form of psychiatric treatment, are discussed generally with special emphasis on the phenothiazines.

Psychopharmacology may be defined as the study and use of drugs which affect thought, feeling and behaviour.

The psychopharmaceuticals in use today are not curative of mental disease. They in no way replace the standard forms of psychiatric therapy, but merely act as an adjunct to these older forms of therapy. Generally speaking, they relieve symptoms of mental disease, such as anxiety, agitation, depression, hypomania, and delusions. By relieving disturbing symptoms, the patient to more effectively utilize resources within himself and they provide a state more conducive to psychotherapy.

The psychopharmacologic drugs fall into two main categories:

CNS Depressants
1. Major Tranquilizers
   Phenothiazine derivatives (Chlorpromazine)
   Rauwolfia alkaloids (Reserpine)
2. Minor Tranquilizers (Meprobamate)
3. Barbiturates
4. Non-barbiturate sedatives and hypnotics

CNS Anti-depressants

CNS DEPRESSANTS

These drugs will be discussed as a group, considering their use and mode of action, following which there will be a discussion of specific drugs within the group.

Use of CNS Depressants

At present, a specific psychopharmaceutical is not used in the treatment of a specific disease. Not enough is known of the biochemical processes involved in each mental disease nor of the biochemical action of the drugs employed to make this possible. Instead, the drugs are used to combat certain target symptoms, symptoms which may be common to widely diversified disease entities.

The CNS depressant drugs have specificity in terms of these readily observable target symptoms. (See Table 1). The choice of drug can first be considered from the standpoint of the primary target symptoms against which they are to be directed. In some instances, a drug may have a benefit (shown by +1 to +3) or in others a disadvantage (-1 to -3). In addition, a drug's initial effectiveness may rapidly decrease, as with barbiturates, as tolerance to the drug increases. This fall-off is indicated by the negative symbol following the effectiveness number.

This table is merely a rough guide to indicate the spectrum of action of the listed drugs. Beyond this, of course, before using a drug, there must be an appreciation of the dynamic situation which has produced the symptoms, the intensity of the symptoms, the duration of symptoms, the multiplicity of symptoms, and the possible side effects of the various drugs.

Results of Use

The evaluation of drugs for use in psychiatry has no true parallel in other fields of medicine. Firstly, improvement is measured in terms of amelioration of signs and symptoms which are poorly understood and extremely difficult to assess objectively. Secondly, it is extremely difficult to perform controlled experiments, as the slightest changes in environment can cause profound changes in the symptomatology of the patient. It is these factors which have made the efficacy of psychopharmacolic agents so difficult to assess and accounts in large measure for the conflicting reports found in the literature.

In general, with the use of CNS depressant drugs it may be said that psychiatric hospitals have reported a marked decrease in the use of physical restraints, seclusion rooms, hydrotherapy, shock therapies and other somatic methods of treatment; a reduction in destructiveness, combativeness and assaultiveness; a greater number of ground privileges; and most important, an increase in the discharge rate, especially of chronic patients. Privately practicing psychiatrists have claimed that when properly used, these drugs increased the number of patients who could be treated in the office, facilitated psychotherapy, made hospitalization unnecessary in many cases and reduced the cost of psychiatric care.[16]

Target Symptoms	Major Tranquilizers		Minor Tranquilizers	Sedative Hypnotics
	Phenothiazines	Rauwolfias (Reserpine)	Propanediol (Meprobamate)	Barbiturates and Non-barbiturates
Anxiety	+1+	+1+	+3—	+2—
Over-activity Tension Restlessness	+3	+2	+2—	+2—
Agression Hostility, Impulsivity, Destruetiveness	+3	+2	+1	+1—
Panic, Fear,	+3	+3	+3—	+2—
Sexual unrest	+3	+2	+1—	+1
Depression Withdrawal	—1	—3	+2	—3
Insomnia	+2	+2	+1—	+3—
Hallueination, Delusions	+2	+1+	0	0

Table 1. Target Symptoms and Estimated Clinical Effectiveness of Psychopharmaeologic Drugs.[15]

Psychoses. The tranquilizing drugs, particularly the phenothiazines, are used with good results in schizophrenia which constitutes the majority of the chronic hospital population. Anxiety and aggression are influenced most effectively; delusions and hallucinations are also controlled quite well. The paranoid and catatonic types respond better than the hebephrenic and simple forms.[10] Phenothiazines are also used effectively in quieting manic conditions, but they are contraindicated in the depressive phase.

Psychoneuroses. The literature on the use of drugs in neurotic individuals is somewhat contradictory. Some claim excellent results with tranquilizing drugs; others feel they are far more effective in psychotic patients, than in neurotic ones. The American Handbook of Psychiatry states, "Our own impression is that the tranquilizing drugs today are more effective in psychotic individuals and that there are fewer failures in the treatment of psychotics than in the psychoneuroses. We feel that if a psychoneuroses does not have anxiety or tension as the main symptom (overtly expressed), the tranquilizing drugs are not effective."[16] Generally speaking, severe anxiety states respond best to the CNS depressants and obsessive compulsive conditions least.

Arteriosclerotic & Senile Psychoses. Tranquilizing drugs are being used increasingly in arteriosclerotic and senile states where they have a beneficial effect by controlling agitation, anxiety and delusions, without interfering greatly with the patient's mental processes.

Delirium States. The tranquilizing drugs are effective regardless of the cause of the acute organic delirium. They work equally well in an alcoholic, drug, or infective delirium. Promazine has become especially popular for the treatment of acute alcoholism.

Mode of Action

The question arises as to how the CNS depressants bring about reduction of anxiety, agitation and other symptoms. As yet, very little is known of the mechanisms whereby these drugs act on brain tissue, but several important and interesting facts have been discovered. Studies of EEG's and neurohormonal content of animal brain have been conducted by Himwich[1,2] using moderate doses of tranquilizers and barbiturates comparable with clinical dosages.

EEG Studies. The parts of the brain that have been studied are those associated with emotional function and include the reticular activating system, the Papez circuit (limbic circuit) and the hypothalamus. The various tranquilizers and barbiturates are found to have more or less specific actions on these regions.

The phenothiazines cause a depression of the reticular formation,[3] and the hypothalamus. They evoke electrical seizure patterns in the Papez circuit.[4] There is no effect on the neocortex or respiratory nuclei.

The Rauwolfia derivatives cause a stimulation of the reticular formation[3] and a depression of the hypothalamus. Like the phenothiazines, they bring about seizure patterns in the Papez circuit[5] and have no effect on the neocortex or respiratory nuclei.

Mepbrobamate causes a depression of the Papez circuit[6] but has no effect on the other areas studied.

The barbiturates depress the reticular formation, Papez eircuit and hypothalamus, but differ from thc tranquilizers chiefly in that they cause depression of the neocortex and thc respiratory centre of the brain. This effect explains the relatively greater sedativc action of the barbiturates, as compared with the tranquilizers.

Neurohormones. It is quite possible that neurohormones are involved in the expression of behaviour although their spccific effects have not been determined. The hormones to be considered arc serotonin and norepinephrinc. Certain similarities exist between thcm. Firstly, these two hormones are found concentrated in the same areas of the brain, namely, thosc eited above as being associated with emotional behaviour: the reticular activating substanee, the Papez circuit and particularly the hypothalamus. Secondly, a chemical similarity exists bctween these two hormones as adrenaline can be oxidized to form an indole aminc, (adrenochromc), and the latter plus an appropriate side chain yields serotonin.

Thc Rauwolfia alkaloid Reserpine, which also contains an indole nucleus, reduces the concentrations of serotonin and norepinephrine in thc body.[8,9] Also of significance is that the cure for the time relationships for the releasc of serotonin and norepinephrine from the brain and thc re-establishmcnt to premedication values follow each othcr closely. It is obvious then, that the rcleases of these amines are closely associatcd phenomena. Eithcr the amines combine with the same rcceptor, or the discharge of one aminc initiates the liberation of the other.

I will mention here in passing, but discuss later, thc interesting fact that the CNS anti-depressant drugs belonging to the monoamine oxidase inhibitor group cause an increase of serotonin and norepinephrine in the brain.

One action of rescrpine involves a decrease of brain neurohormones. The question arises as to whether the same eoncept can be applied to the phenothiazine chlorpromazine. It has been found that chlorpromazine does not empty the depots of serotonin and the cateehol amines. However, Gyermeck[9] has pointed out that chlorpromazine contains a side chain that rcpeatedly occurs in substances which depress the effects of amines, including norepinephrine and serotonin. Chlorpromazinc attaches itself to the same kind of binding site as do these amines, thus prevcnting the attaehment of the neurohormones to their binding sites in the cells.

Now the discussion will proceed to a consideration of thc specific drugs within this broad category of CNS depressants. Though still important, the barbiturate and non-barbiturate sedatives and hypnotics will be omitted from the discussion for the sake of brevity.

MAJOR TRANQUILIZERS: PHENOTHIAZINES

The phenothiazines arc the most potent tranquilizers available and at the same time, produce the most serious side effects. Chlorpromazine (Largactil, Thorazinc) was the first phenothiazine developed and the other members of this group have been produeed in a search for a new tranquilizer whieh would be more potent and safer than the original.

On the basis of chemical structure, the phenothiazines may be divided into three groups:

Group I — Piperazine Group
Fluphenazine (Permitil)
Trifluoperazine (Stelazine)
Perphenazine (Trilafon)
Thiopropazate (Dartal)
Prochorperazine (Compazine)
Group II — Chlorpromazine Group
Triflupromazine (Vesprin)
Chlorpromazine (Largactil, Thorazinc)
Promazine (Sparine)
Group III — Piperidine Group
Mepazine (Pacatal)

Group I is characterized by a piperazine ring in thc side chain, Group II by a thrce carbon straight chain and Group III by a piperidine ring in the side chain.

Each group of phcnothiazincs differs from the others in milligram poteney and in its propensity to cause some particular constellation of side effeets. There is also an intergroup variability in milligram potency and side reaetions depending on the halogen attached to the phenothiazine ring.

The order in which the drugs are listed indieates their relative milligram potency, Permitil being the most potent (20 x "stronger" than Largaetil mgm for mgm); Sparine and Pacatal being the weakest, with half the potency of Largactil. Generally speaking, sedative action is inversely proportional to poteney.

The phcnothiazines are the depressants of choice in the treatment of schizophrenia, manic reactions, senile psychoses, toxic deliria and the more severe agitated psychoneuroses.

Dosage & Duration of Treatment

The more potent the phenothiazinc, thc smaller its initial effective dosage rangc, but it must be stressed that the drugs can be used effectively only if attention is paid to individual susceptibility to a compound. The usual error in dosage is to give too little rather than too mueh or to terminate treatment prematurely.

This accounts for many of the failures with these drugs.[10] Continuous treatment must be individualized. The basic rule should be to administer the minimum which controls the patient's symptoms.

That improvement can be sustained is exemplified by patients who have taken Largactil for five years and Trilafon for four years. This has been accomplished with progressively lower rather than increasing doses of their medication. There is no clinical evidence to indicate the development of tolerance to phenothiazines. Nor has there been any evidence of addiction to these tranquilizers. They can be discontinued abruptly even after years of administration without the development of withdrawal symptoms. Today there is no clinical or laboratory evidence that protracted treatment has any deleterious effects on the liver, bone marrow or kidneys.[11]

Side Effects

Phenothiazines may cause a variety of autonomic, endocrine, allergic and neurologic side effects. The type and frequency of these reactions are related to milligram potency and chemical structure.

	Grp. I Piperazines Eg. Stelazine	Grp. II Largactil	Grp. III Piperidines Eg. Pacatal
Mg. Potency	+++	+	+
Sedation	±	++	+++
Autonomic Side Effects	±	++	+++
Seizures	±	++	+++
Dermatitis	±	++	+++
Jaundice	±	++	+++
Agranulocytosis	—	++	+++
Extrapyramidal Reactions	+++	++	+

Table 2. Side effects of the phenothiazine drugs

Autonomic Side Effects. Although phenothiazine derivatives have both adrenergic blocking and anticholinergic actions, the latter predominate being manifested by tachycardia, dry mouth, blurred vision, pallor and constipation. These reactions are commonest in the weakest phenothiazines.

Endocrine Effects. Patients on phenothiazines gain weight probably due to increased food intake, which is not necessarilly associated with psychiatric improvement. Feminizing effects which may occur are menstrual irregularity and lactation in women and gynecomastia in men. False positive tests for pregnancy may occur. These effects are produced chiefly by Largactil.

Allergic Reactions. Dermatitis, jaundice and agranulocytosis are allergic reactions[11,12] to phenothiazines, if they occur, they are almost always evident in the first three or four months of treatment. Jaundice has been caused most often with Pacatal and Largactil. Most clinicians discontinue the phenothiazine when jaundice appears, but it is safe to re-treat patients after jaundice has subsided. Agranulocytosis is a rare complication. The frequency of all these allergic reactions is highest with the weaker phenothiazine derivatives.

Convulsions may be precipitated by any phenothiazine not only in epileptics but even in non-epileptics if large enough doses are given. However, seizures are a rare side effect with members of the piperazine group.

Extrapyramidal Reactions are more common in drugs of the piperazine group than in the other two less potent groups. Three syndromes have been distinguished: a) akathisia or motor restlessness which is often described by the patient as the "jitters", b) classical Parkinsonian syndrome with rigidity, resting tremor, and mask-like facies, c) dystonic syndrome manifested by facial, jaw and tongue spasms, spastic torticollis or retrocollis, oculogyric crises and tonic or myoclonic twitching of shoulder-girdle muscles. The syndrome may be confused with hysteria, tetanus, encephalitis and meningitis. Usually the syndome is self-limited if the drug is stopped.[14]

Choice of Tranquilizer

Summarizing the effects and side reactions of the phenothiazines, it may be said, that the weaker the milligram potency of the drug, the more sedative action is present. With the exception of extra pyramidal reactions, all side effects are more prevalent among the weaker phenothiazines. Thus when sedation in addition to tranquilization is desired, as for acute excitements, Largactil or Vesprin would be the drug of choice. When sedation is undesirable as it is frequently in ambulatory patients, Permitil, Stelazine, Trilafon, or Dartal would be the preferable drug.

MAJOR TRANQUILIZERS: RAUWOLFIA

Although they share many of the antipsychotic and tranquilizing effects of the Phenothiazine derivatives, Rauwolfia compounds are administered in lower doses and are much slower acting. The Rauwolfia compounds have not been as well accepted in psychiatric therapy as the phenothiazine drugs and a number of comparative studies have indicated that they are not as effective.[17] In many centres they are reserved for patients who do not benefit from other procedures, or who show unfavourable side effects to the phenothiazines.[18]

As for side effects to the Rauwolfias, serious mental

depression may occur. They are capable of producing extrapyramidal phenomena similar to those produced by the phenothiazines. Seizures may occur. Effects on the autonomic system include bradycardia, cutaneous flushing, salivation, vomiting, diarrhoea and nasal congestion. Hypotension with syncope may be troublesome, particularly in aged or hypertensive patients. Activation of peptic ulcer with gastric haemorrhage may occur.

MINOR TRANQUILIZERS

The minor tranquilizers are used most widely for relief of common nervous tension and anxiety. The chief advantage claimed for these agents over the older sedatives such as pheno-barbital is that emotional tension may be relieved with relatively little accompanying sedation.

Any compound that will relieve anxiety may be useful in the symtomatic treatment of neuroses and anxiety states. Therefore, much trial and error is often required in selecting the most effective drug for a specific patient. Not uncommonly anxious psychoneurotic patients fail to obtain relief from mild tranquilizers or sedatives, but they do benefit from a major tranquilizer.

The minor tranquilizers are safer than the major tranquilizers and do not produce extrapyramidal phenomena. Habituation has been a problem with some minor tranquilizers but not to so great an extent as with the barbiturates.

The minor tranquilizers in common use are meprobamate, hydroxyzine, chlordiazepoxide and benactyzine. Meprobamate (Equanil) the first minor tranquilizer introduced, has received extremely wide acceptance. Although the over-all toxicity of the drug is low, it may induce skin rash, chills and fever, GI disturbances and paradoxial excitement. Drug dependency and addiction are possible. Withdrawal, including convulsions, have been observed. Hydroxyzine has both sedative and antispasmodic action which makes it useful as a calming agent. Toxicity and incidence of side reactions are low. Apparently it has little or no tendency to cause habituation.

CNS ANTI-DEPRESSANTS

In the last few years, many new drugs claiming anti-depressant or psychic-energizing action on the CNS have been marketed. Drug companies have undertaken vast advertising campaigns to promote these drugs. The result has been a widespread acceptance of these substances in spite of a lack of adequate evaluation of their efficacy.

An anti-depressive drug is one which relieves depressive symptomatology — either through stimulation of the CNS or through a sedative effect. Since anxiety is involved to a greater or lesser extent in almost all cases of depression, any agent that relieves tension or agitation will presumably afford some relief.

Classification of Anti-depressants

This is a tentative classification based on the probable mode of action:

1. Direct CNS Stimulators: Amphetamines
   - Methamphetamine (Desoxyephedrine)
   - Dextroamphetamine (Dexedrine)
   - Amphetamine (Benzedrine)
2. Indirect CNS Stimulators (MAO inhibitors): Hydrazines
   - Pheniprazine (Catron)
   - Isoearboxazide (Marplan)
   - Phenelzine (Nardil)
   - Nialamide (Niamid)
   - Iproniazid (Marsilid)
3. Bimodal CNS Stimulators (direct & indirect)
   - Tranylcypromine (Parnate)
4. CNS Suppressants
   - Imipramine (Tofranil)

Direct CNS Stimulants

The amphetamines have a direct excitatory effect on neuronal cells. They may also have some minor indirect action. Their effect is of short duration and is often followed by a "let-down". These compounds are used for a variety of disorders, including narcolepsy, postencephalitic disorders and appetite control. Because of their side effects (blood pressure changes, overstimulation, sleep disturbances, tremors) and because of the brevity of their action, they have very limited use in alleviating depression.

Methylphenidate and Pipradol are classified as "minimal sympathomimetics" and appear to have much milder sympathetic side reactions while retaining the stimulating effect on the CNS of older amphetamines. They have not proved successful, however, in treating severe depression.

Indirect CNS Stimulants

Monoamine oxidase inhibitors—Hydrazine group. Present evidence indicates that at least two enzymes are responsible for the in vivo catabolism of brain amines. Monoamine oxidase seems to be the most significant in the break-down of neurohumoral amines such as norepinephrine and serotonin. When the enzyme monoamine oxidase is inhibited, the brain levels of these amines rise. Such increments in amine levels, demonstrated to occur in diencephalic areas of the brains

of animals,[19,20] have been associated with behavioural changes. Activation by the amines, of regions of the mesencephalon has not yet been demonstrated in man, but has been suggested as at least one of the modes of action of monoamine oxidase inhibitors.

The disadvantages of this group include a slow onset, requiring days or weeks to become apparent, and a cumulative effect with no subsequent let-down. Dosage is difficult to regulate due to their cumulative effect. Toxic effects include acute liver necrosis, with jaundice and death sometimes resulting. Other side effects are tremors, postural hypotension, excessive perspiration and insomnia.

Cholinergic reinforcer — Deanol. This drug is virtually free of serious side effects, but is not of high potency. It is of little value in the treatment of serious depressions.

Bimodal CNS Stimulants These are the non-hydrazine MAO inhibitors. The bimodal stimulants have the advantage of providing along with indirect action, a fast, direct stimulation which is nearly as rapid as that provided by amphetamines. But in contrast to amphetamines, the action of the bimodal stimulants is sustained. Since there is rapidity of action and very little cumulative effect, the dosage of such a compound is not difficult to regulate. Tranylcypromine (Parnate) is representative of the group.[24] Side effects are overstimulation and postural hypotension.

CNS Supressants

The drugs in this group are chemically quite similar to the phenothiazines and have some properties in common with them. Because of their suppressant action, they are especially useful in the treatment of agitated depression. Imipramine (Tofranil) is the most widely used member of the group.

Adverse effects are much like those found with phenothiazines: blood dyscrasias, jaundice, parkinsonian syndrome. Aside from these reactions, the chief disadvantage of these compounds is the relatively slow and uncertain onset of action. Imipramine should never be used with an MAO inhibitor as convulsions and death have been known to occur.[21]

Use of Anti-depressants

The most effective and reliable therapeutic tool in the management of severe depressions remains electroconvulsive therapy. It has the advantage of working very rapidly and in competent hands it is relatively safe. The typical agitated, depressed involutional patient most frequently responds favourably. However, the majority of patients who have received it have an aversion to the treatment which varies from mild dread to acute horror.

Thus a potent, safe pharmaceutical would be a great boon in the treatment of depressive disorders. There has been a rash of articles appearing in the recent literature reporting marked beneficial results with the use of antidepressants.[22,23,24,25]. However, Liberman[26] points out that the majority of these articles are poorly designed and poorly controlled, using patient groups that are much too small and with no use of placebo or "double-blind" studies which are the *sine qua non* of successful drug evaluation. Without adequate controls, beneficial results ascribed to the drugs being tested can very easily be due to many factors. Many of the carefully controlled experiments, using "double-blind" studies found no significant difference between drug and placebo groups.[27,28,29]. In addition to this, the frequency and seriousness of side effects with many of these drugs is quite alarming.

In view of these facts, it is difficult to justify the widespread acceptance of antidepressant drugs as an important part of psychiatric therapy. This, however, does not mean to discourage the use of these drugs on a research basis, both in the laboratory and on the wards. It is possible that a powerful tool in the treatment of depression is within reach, but until there is proof of efficacy and safety, this tool must be used with caution and reservation.

ACKNOWLEDGEMENT

With appreciation to my husband, my best advisor and critic.

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Continued on page 151

On Inspection

S. M. Zweig 6T3
D. P. Armitage 6T3

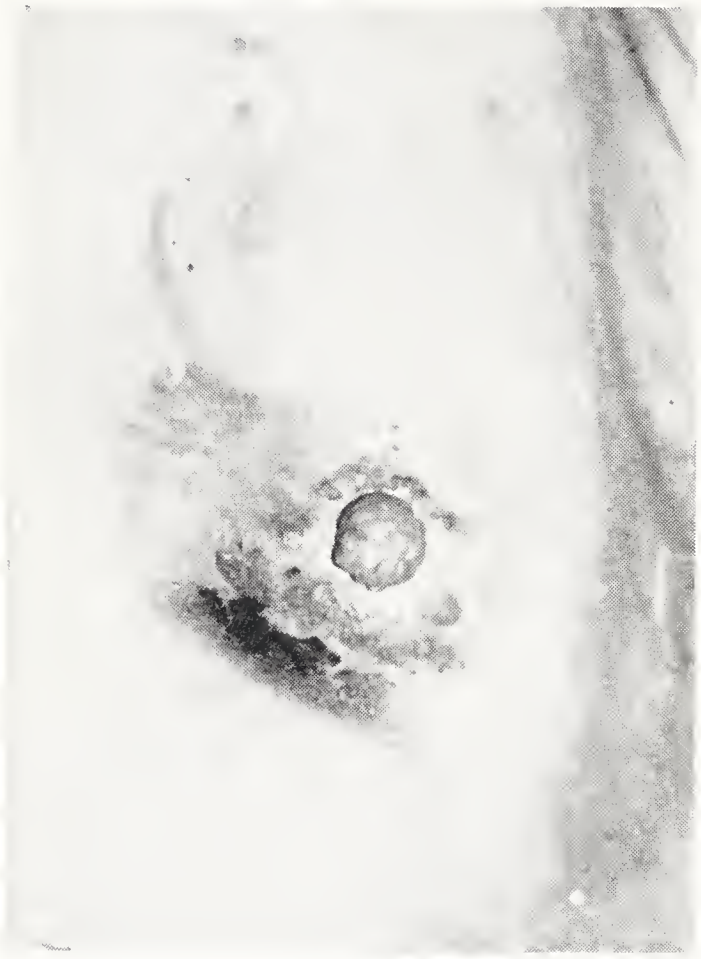

FIGURE 1: This patient complained of a sensation of itching and burning about the nipple and presented as pictured. Diagnosis?

FIGURE 2: Note the flat nodules around the eyelids. What is this condition, commonly seen in elderly people, called?

FIGURE 3: Note the thickening, grooving, and formation of nodules in the skin of the neck. Diagnosis?

FIGURE 4: This patient complained of becoming shorter, and bone pains, especially backache. Diagnosis?

This month's *On Inspection* is presented by the CIBA Company.

FIGURE 5: Note the protruding abdomen and maculo-papular lesions on the forehead. Diagnosis?

FIGURE 6: Chief complaint: bone pain and tenderness. Blood studies revealed an eosinophilia. Diagnosis?

See page 172 for answers.

Continued from page 149

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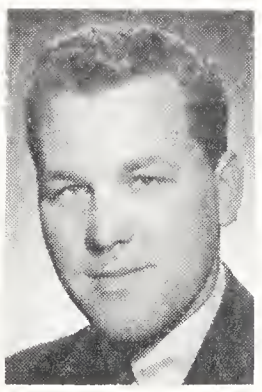

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Psychiatry in the Maximum Security Setting

S. E. Atack 6T3

This article concerning the patient population, activities, and physical setting of a special mental hospital was prompted by the author's previous two summers of internship.

High on a hill overlooking the site of the British Naval Establishment of the War of 1812, the Ontario Hospital Penetanguishene is as unique in its history-laden grey stone buildings as it is in its service to the surrounding community and the whole of Ontario. This hospital provides routine psychiatric treatment with an 'open ward' policy in one building, while the other comprises Ontario's only maximum security hospital. It is with this latter part of the hospital, the 'Oakridge' division, that this paper will deal, for although it is a name which appears often in the press, the medical profession as a whole has little opportunity to become acquainted with the nature of the patient population, their lives within this unusual hospital, or the treatment which they receive.

It is unfortunate that the attitude of the lay public toward this hospital has been one of misguided horror. This may, in part, be understood since it is generally brought to their attention in connection with cases in which mental illness has been associated with violence and has proved to be sensational press material. After patients are admitted for treatment, no more is heard of them by the community, and their progress does not counteract this initial impression as, in all fairness, it should. With the new awareness and understanding of mental illness and the great advances in its successful treatment, the image of the maximum security hospital will gradually soften, and community concern for the rehabilitation of these patients be brought to the fore.

The Building

The original 'Oakridge' building was opened in 1933 and at that time consisted of four wards of thirty-eight rooms each. In the late 1950's four similar wards were opened. These two units are self-sufficient in some respects as a security measure, minimizing movement of patients within the building, but there remain facilities for good hospital unity in a common yard and an extremely well equipped industrial shop for those patients who are able to take advantage of them.

The building as it appears now is constructed for stringent security, which, because of the smaller number of patients is more strict than many penitentiaries. Each room may be on individual lock if necessary, a whole ward may be placed on 'dead' lock, and gates along the main corridor may section off parts of the building if required. At all times patients receive individual supervision by a trained attendant staff.

In spite of its rigorous physical structure, it is interesting that there are no 'inmates' or 'guards' in this 'prison'. The attitude of staff and patients alike is medically orientated, and 'Oakridge' is first and foremost a hospital. The attendant staff is trained in basic psychiatry and can often follow a patient's behaviour to the extent that there is an element of prediction. They are not armed, and it is only on a rare occasion that anything more than verbal persuasion is required. These men take more than a casual interest in their charges, and are able to give the men a good deal of support by virtue of taking a sympathetic interest in their problems, and being available for help in matters of practical importance.

This attitude of non-punitive supervision reflects itself in the patients' response to the staff. To give a practical example, one long term patient was subject to recurring episodes of violent behaviour. His insight was sufficient that he was aware of the impending onset of one of the phases and knew that there was a possibility of his harming himself or someone else. During this 'aura', he made a point of approaching an attendant, suggesting that he should be kept in seclusion until his physician was called and therapy started. There was no apology or secrecy in his action, which indicated that he took for granted the understanding of the staff directly concerned with his well-being.

In this respect it is interesting to note the gradual change in attitude of newcomers who have been referred from prisons and reformatories for psychiatric assessment or treatment. At first they look upon the hospital as another 'jail' with 'guards', and generally have a hostile attitude toward the other patients, who, as far as they are concerned, are 'nuts'. Within a short time they find that no one is out to 'get them', and they relax. Often, in spite of a history of considerable difficulty in previous management, these men become model patients and respond well to therapy enabling them to return for the completion of their sentences.

The fact that the patients are in a truly maximum security setting is not underplayed, and no liberties are taken by the staff regarding these measures. Equal respect for rules is expected of the men. Discipline is fair but firm, taking the form of loss of privileges which hold a high place in the hospital. This is not only a security concern, but also serves as a learning experience in many cases where there has been notable lack of appreciation of consequences for actions. For the most part, this engenders mutual respect between staff and patients. Security is a two-way street.

Patient Activities

During the past few years with the advent of drug therapy, and increasing community concern for the mentally ill, activities have played an increasingly large part in the total rehabilitation of patients within the hospital setting.

'Oakridge' is fortunate in being surrounded by a community which, for the most part, is directly or indirectly concerned with the hospital. They are acutely aware of its presence, and welcome opportunities to be of help to the patients. Volunteer groups come in to arrange social events for patient participation, and are welcomed in turn by the patients to take part in activities planned for their pleasure.

The emphasis is placed upon patient organization through Ward Councils. Many spontaneous card and checker games are played during the day, and the patients have arranged an efficient and complete programme of team sports. A system of leagues, enables the men to take part in seasonal sports. Families, friends, local business, and hospital administration provide the necessary equipment.

Since the development of the programme, there has been no lack of stimulating competition. Local high school teams, amateur and professional teams in the district, as well as the staff provide more than enough. The visiting teams are enthusiastic about the games, but to the patients they mean much more than sport. The fact that their own Athletic Board proves its capability in arranging activities for a diverse group, as well as the obvious interest of the neighbourhood means much more.

Two summers ago, the patients organized their own monthly paper, 'The Quill'. This was an entirely new venture, and although the staff is available for advice, the patients have produced by themselves an original and thoughtful publication which now enjoys a circulation among other hospitals and individuals interested in 'Oakridge'.

The men have turned an unavoidably austere building into a centre of cooperation and activities.

The Patient Population

Among approximately three hundred patients in the 'Oakridge' hospital there is considerable variation in case material. About one third have been transferred from other Ontario Hospitals where facilities have proved inadequate for their special management. Another third have been referred from Ontario reformatories and penitentiaries, and the last third is composed of capital cases who have been found by the courts Unfit to Stand Trial, or Not Guilty by Reason of Insanity.

Patients referred from Ontario hospitals receive the same specific treatment available to them in these other hospitals with the added advantage of closer supervision. When it is felt that this secure setting is no longer necessary for their management, they may be returned to a conventional hospital, or discharged directly to their community after successful treatment.

The group under sentence to reformatories or penitentiaries may be treated and returned to the penal institution for the completion of their sentence, In this way 'good time' and parole eligibility are maintaned. If, however, the sentence has expired but it is felt necessary to continue treatment before the patient is well enough to return to society, provisions are made for this continued stay in an Ontario Hospital. A maximum security division is not mandatory, and he may be transferred to a hospital closer to his community for further treatment and rehabilitation.

The patients admitted to 'Oakridge' as capital cases have had over the years technical problems in their return to the community which are related to the law. If, after treatment, the unfit are found fit to stand trial, they may return to the courts for consideration of the original charge. If found Not Guilty by Reason of Insanity originally or upon return to court, they are confined in a maximum security setting for treatment. Total rehabilitation and return to the community has not been possible up to the present time. Although there is legal provision for discharge of these patients when, to the satisfaction of medicine and the law, they are cured of their psychiatric illness, no such precedent of release exists. The attitude of the law is understandable, for in the past the incidence of cure for mental illness was low regardless of legal complications, and capital cases did not constitute a particularly special problem. With the advent of specific and successful treatment, the cure of psychiatric disorders shouts out its being in the records of rapidly increasing discharges of rehabilitated patients from mental hospitals. With this established success, it is hoped that the existing legal channels may be put to good use in the discharge of mentally well capital cases so that they

may again contribute to the socicty whieh has made provision for their care and treatment. In countries in whieh this has been practised for some years, for example, Denmark, signifieant series of rehabilitated capital cases have shown promising trends.

Many professional people, legal and medieal, as well as the general public, hold the concept that 'onee in Penetang, always in Penetang'. This is not truc. The patient turnover stands well with other hospitals. During the period January to September 1962, therc werc one hundred admissions to the maximum seeurity division, and ninety diseharges. Thc building is by no means a hospital of final custody, but one of active trcatment.

Trcatment

Modern specific therapy — physieal, psychopharmachological, and psychotherapeutic are available. Speeial help in social work and pschology make the investigation and treatment of the patient more eomplete, along with medical and surgical consultation. Any speeial investigation which is required but is not within thc scope of hospital facilities is obtained at other centres. Progress is reviewed at regular intervals in formal conferences.

Summary

A brief picture of Ontario's maximum hospital at Penetanguishene has been presented for the consideration of the medical undergraduate with the hope that some of our erroncous eoncepts may be dispelled, and that a more realistic and sympathetic view is developed toward the future of the patients.

ACKNOWLEDGEMENT

The author extends thc thanks of the five internes who werc priviledge to work at O.H. Penetanguishenc to Dr. B. A Boyd and his colleagues. The experience and teaching which we received were invaluable.

Book Review

A Textbook of Histology — by William Bloom MD and Don W. Fawcett MD: W. B. Saunders Co. Philadelphia — 8th edition, 1962, 720 pages, illustratcd.

A Textbook of Histology is a concise, well-illustrated book which covers somewhat more than the material found in a first ycar course in Histology. About one-third of the book deals with introductory eomments, the fine strueture of the cell, and the four primary tissues; the rest of the text is devoted to the histology of the systems. The more detailed considerations on each topic (for instance, the histogenesis of organs and systems) are put at the end of each section, in smaller print. This feature makes it unneeessary for a student to struggle through these details on his first run through thc book, and yet the details are there to refer to later.

Another characteristie of the book is its use of clear electron micrographs, colored illustrations, and three-dimensional visualizations of microscopic structures. Photographs of reconstructions as well as diagrams are used to help thc student visualize structures in three dimensions.

The *Textbook of Histology* has had quite an impressive history. Begun in 1928 by Alexander A. Maximov, the first edition was complcted and edited after Dr. Maximov's death by William Bloom. Since then there have been seven English editions, four Spanish editions, one Portugese, and one Korean.

Although this book is 220 pages shorter than Ham's *Histology,* the factual material contained in it is somewhat grcater because it is not so much a teaching book as it is a review and reference book. For this reason it can be recommended to any student who wants a reasonably quick, thorough review of Histology.

N.J.M.

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Psychosomatic Concepts

Solomon S. Brickman 6T3

Some fundamental principles of psychogenic illnesses are discussed and the author attempts to show a specificity in the etiology of somatic dysfunction.

"In order to cure the human body, it is necessary to have a knowledge of the whole of things." Hippocrates.[5]

Our ancient mentor writes of the concept of conceiving of a patient as a whole, rather than as an organism encircling a duodenal ulcer or subterred under psoriatic dermatitis. Yet in the past decades, the pathological, bacterial, biochemical and now immunochemical origins of the disease mistakenly thought of as *the etiology* of any disease have superseded the multi-causal view of Hippocrates. In opposition to these analytical trends of scientific thought, a tendency to view the patient as soma (body) and psyche (mind) synthesized into a unity, again permeates our medical studies. The importance of the mind, or emotions and psychological problems as one of the causes of illness the doctor sees, has been evaluated by Lewis to be as high as 47% of all medical cases. This old-new technic of understanding that illness has not one etiology but many, with the psyche playing an important role, is called psychosomatic medicine or "comprehensive" medicine.

BASIC CONCEPTS

Psychosomatic medicine has been superficially viewed as a new term for an old thought. That one can wish ones self sick, even dead, is common knowledge among people. But psychosomatic medicine is, as a science, based on recent concepts. Firstly, Freud[12] taught that unconscious personality conflicts can lead to the development of personality disturbances. Anxiety, frustrations, disturbances of thought and volition, can produce organic dysfunction with resultant somatic pathology.

Cannon showed that various physiological actions, such as secretions, circulation and muscle tensions, will vary with the emotional state. Pavlov demonstrated that these physiological responses, like gastric secretions, can be conditioned responses to stimuli, superficially to a ringing bell, more specifically, to a basic drive, like eating.

The scientific evaluation of personality types into such groups as extravert and introvert by Jung, have been attempts to analyze and classify personality types, and systematize psychiatric thought.

Finally, the *Gestalt school* concepts and the psychobiological studies of Meyer have illustrated the importance of the Holistic concept of human reaction types. This theory implies that the manifestations of the psychobiological activity is the expression of the whole personality as a unit; that man is not the sum total of his parts but something different, something more.

Basic to the psychosomatic approach are both the *physiological effects of emotions* such as fear, that stimulates the sympathetic innervated peripheral arterioles to contract and increase the blood pressure; and the ease that the psychogenic factors can be *investigated by verbal exchange.*

Psychological Effects on Physiology

Normal drives, sleep, sex, exercise, alter the physiological homeostasis for a short period only. The parasympathetic nervous system is concerned primarily with the multifaceted anabolic processes of the body, with vegetative existence. The sympathetic system prepares man to fight or flee influences of the external world, neglecting the anabolic processes. In neurotic disturbances of organic functions, the external situational balance as well as the internal vegetative balance is upset.

Should the emotions be of hate, fear, or self-assertiveness, the *sympathetic* preparedness to fight or run often supervenes. The equilibrium is disturbed in the body, and the blood pressure, heart rate and metabolism are but a few of the altered processes. If no action occurs to release these alterations, if the sympathetic system remains hyperactive chronically or often, for long periods some of the above mentioned physiological responses become permanent. Essential hypertension, diabetes mellitus, and thyrotoxicosis are some conditions that have often been related to a psychodynamic state causing an oft-recurring or chronic sympathetic dominance. The motivating forces of this state are neurotically inhibited and not released by appropriate action.

A second group of neurotics react to these stimuli of fear and apprehension by an emotional withdrawal from action and the somatic effects of an overactive *parasympathetic* system upset the body equilibrium. Hyperperistalsis and hyperemia of the colon, and hyperacidity of the stomach are some somatic signs of the patient's reversion to the dependent state in which, as a child, he was praised and fed by his mother. This is a state paradoxially reversed from the first, yet appropriate for a state of dependency, helplessness and hopelessness. Illustrative of these functional disorders which lead to somatic lesions are the patients with a duodenal ulcer or ulcerative colitis.

Attempts at compensation, of re-establishing homeostasis may cause overcompensation and the symptomotology will be a *mixture* of symptoms ascribable to both adrenergic and cholinergic mechanisms. One may revert to one basic vegetative response only, or may use both basic physiological responses at different times or, perhaps, simultaneously. The onset of a severe headache, an adrenergic-orientated disturbance in his patients with ulcerative colitis, has heralded to Engel[6] the improvement of the cholinergic-oriented lesion in the colon.

Specificity of Emotional Factors

The older view negates any specific relationship between personality, hereditary, constitutional and emotional factors with the physical sequelae, as the latter constitute a psychosomatic disease. But this theory as with all others takes into consideration any local conditions of an organ or organ system, bacterial, anatomical, or biochemical that may predispose it to organ dysfunction.

Alexander[1] teaches that the specificity inherent in the disorder lies not in psychological factors alone, anyone of which may be expressed in numerous ways, but in the dynamic configuration in which they appear (See Fig. 1). The specific dynamic pattern for diarrhea is pictured thus:

> *"The frustration of oral-dependent longings leads to oral-aggressive responses which leads to guilt . . . to anxiety . . . to overcompensation for oral aggression by the urge to give and accomplish leading to inhibition and failure of the effort to give and to accomplish and thence to diarrhea."*

The act of defecation can be elaborately interpreted as the elimination of an incorporated, dangerous and bad mother or more simply, as Alexander implies, a childish expression of giving, a gift, or as an accomplishment. Accordingly, ulcerative colitis is closely linked with anal regressive emotional stimuli.[1]

Personality Types

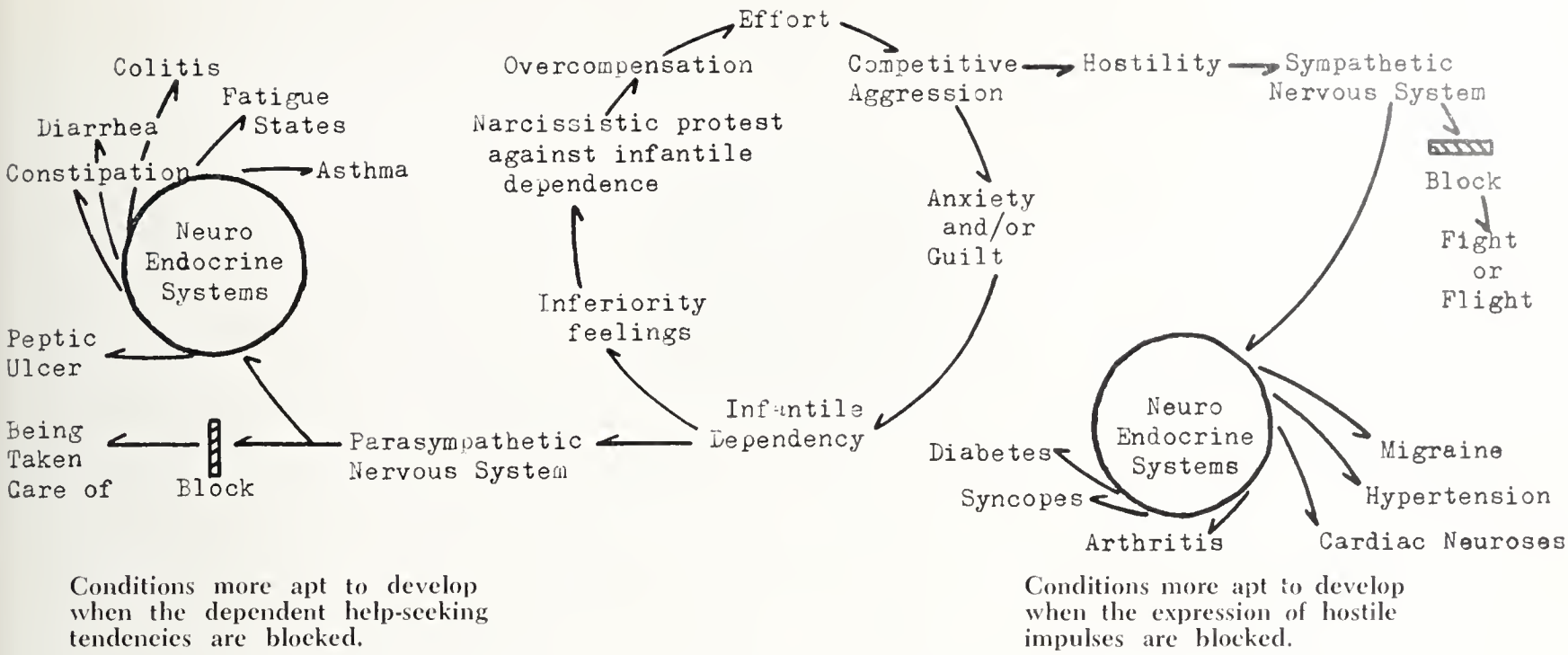
Dunbar,[5] having studied the personality profiles of 1600 patients with phychosomatic diseases, has found similar profiles in 80 per cent of any one illness group. Engel[6] illustrates the significant personality profile in ulcerative colitis to include such factors as a pathological mother-child symbiosis, a mother or mother surrogate domineering the child, and serious defects in the ego functions of the patient. As well, when a patient enters a state of helplessness or hopelessness, regressive oral and anal fixations dominate his personality.[7] Alexander is at variance with pseudo-authoritative tones of personality specificity in psychosomatic disorders and reduces them to a correlation of emotional constellations and vegetative innervations. Dunbar[5] concedes, however, to the importance of the specific emotional conflict in determining the symptomatology within the illness pattern, and reduces the inconsistency to a difference in stressing which factors are more significant.

Nervous and Hormonal Mechanisms

Because of the complexities of the autonomic nervous system, their antagonistic and overcompensatory effects, the theory of specificity relates only to the factors initiating the disruption of homeostasis and not to the ultimate results. Selye[1] postulated the triphasic "Adaption Syndrome" consisting of the shock and countershock phase, the phase of resistance and the phase of exhaustion. By experimental methods, he was able to produce his so-called "diseases of adaptation" such as arthritis and hypertension, which he related to the postulated hormonal mechanisms in the adaption syndrone. His work has added the complexity of hormonal relationships to the concept of psychosomatic disease.

Significance of Psychosomatics

Buck and Hobbs have shown a statistically significant 200% recurrence rate of psychosomatic illness in patients who presented with some other psychosomatic disease as compared to the psychosomatic rate in the patients who first came with classical non-psychosomatic illnesses. All patients in the five year survey received "standard" medical care as practiced in Windsor, Canada. Dunbar[9] investigated psychosomatically ill patients classified into two groups, those treated by simple psychological methods as well as the routine medical cure, and those treated by the latter method only. The former group remained



Firgure 1. Schematic Illustration of the Concept of Specificity in the Etiology of the Disturbances of Vegetative Function.[1]

well although external conditions were not altered, and required few readmissions to hospital. The latter group had many recurrences of their disorders, new illnesses of a psychosomatic nature, and many more hospitalizations. These statistics are but a few of the many available that show the significance of "comprehensive" medicine.

Summary

I have attempted to illustrate the scientific basis of psychosomatic medicine, and have explained in a necessarily over-simplified manner, the relation of the psyche to functional and somatic dysfunctions. For as often as we prescribe some phenobarbital or amphetamine, we should lend an ear and dispense thought-out suggestions.

ACKNOWLEDGEMENT

I wish to thank Dr. D. Cappon for his helpful criticisms of this paper.

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Abstract

Pheochromocytomia - A Rare Case, Lancet, 21 July '62.

A most interesting case history is described of adrenalin-secreting pheochromocytoma which caused a sustained hypotension to shock levels. The mechanism of action is the peripheral vasodilating effect of the adrenalin.

F.L.

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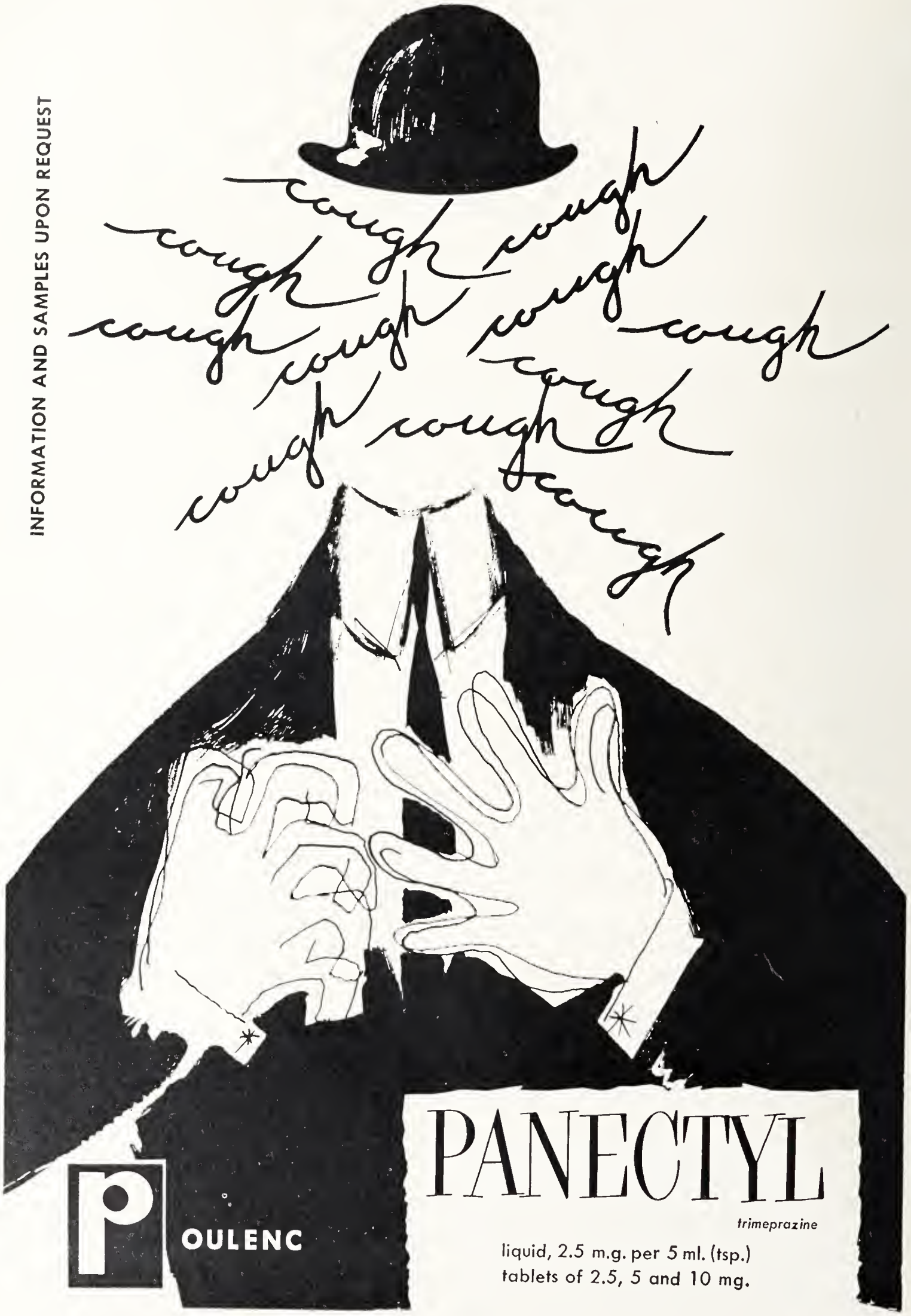
resistant cough



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INFORMATION AND SAMPLES UPON REQUEST

Paranoid Reactions

M. L. MacIntosh 6T3

A brief review of contemporary theories deals with the definition, causes, and mechanisms of paranoid reactions.

Pathological mental states are generally reached by gross exaggeration of normal mechanisms. We are all equipped with defenses with which to protect our self-image. Thus the personality remains integrated.

When the paranoid type of personality faces disintegration one particular form of defense is used. This is denial and projection. Who of us has not rationalized his own behaviour to preserve a good opinion of himself? Who has not denied his own impulses towards a person and projected these to that person? Instead of saying "I don't like him" one says "He doesn't like me".

Classification

The American Psychiatric Association divides paranoid reactions into two categories, paranoia and paranoid states.

Paranioa is defined today in much the same manner as Kraepelin did in 1893. It is a chronic mental disorder of insidious onset, characterized by an unchangeable logically systematized persistent delusion system, without hallucinations, with rational thinking, emotions and behaviour outside the system, except when the delusions become so frightening as to color the patient's whole life.

Freud gave the term dynamic rather than descriptive meaning, stating that it is a defence system against self-blame, comparable to others such as hysteria and obsessions. Others have followed his lead in formulating theories about the genesis of the reactions.

Pure paranoia is relatively rare. It might be illustrated by the German general of the Nazi regime who was convinced that the Jews planned to pour burning oil down the chimney of any building he might be visiting, and accordingly had all such buildings searched.

Paranoid states are similar to paranoia, but with delusions not as systematized as in paranoia, nor as disorganized and bizarre as paranoid schizophrenia in which there are hallucinations.

In practice it is rarely possible to divide paranoid reactions into neat categories. Paranoid trends are found in psychoneuroses, personality disorders, and in other psychoses such as the manic-depressive and schizophrenic types. Many psychiatrists discard the paranoid reaction group entirely as an entity and describe psychoses and other states with paranoid manifestations.

Paranoid reactions tend to form a spectrum, comparable to cardiac ischemic disease, ranging from relatively well compensated types in which the personality appears intact, down through imperceptible gradations until personality becomes disintegrated. The stage is judged by the extent of organization of the delusions, the extent to which emotional response is appropriate, the correctness of evaluation of reality, the extent of symbolization and projection of subjective material as hallucinations, and the extent of psychobiological and personality disintegration.

In the spectrum of paranoid reactions we can probably make a rough division into "normal" defense reactions, definitely paranoid personalities, such as cranks, eccentrics, fanatics, reformers and some types of criminals, and those with paranoid psychoses.

Associated characteristics

Paranoid psychoses usually appear towards middle life, approximately ten years later than schizophrenia. The reason is not clear, but it may be that in earlier life the paranoid is fairly well compensated, but succumbs later to the realization that life is half over, and his lack of achievement may precipitate regression. Noyes and Kolb say that a high percentage never marry, perhaps because of a homosexual fixation, a theory first proposed by Freud.

It is also said that the "pure" paranoid is of superior intellect, presumably because he has greater ability to rationalize and he finds this a successful defense mechanism. The incidence is unclear, partly because the accepted definition may exclude many pathological states of a similar nature.

The paranoid is himself unaware he suffers delusions, and because his delusions are so logical in system, if not in premise, other people are often deceived. With

this illness he has better contact with and more control of reality than with other psychoses. This makes the illness difficult to recognize. The paranoid will often appear for therapy only to disprove what someone has said about him.

Etiology

The causes of paranoid illness are believed to be environmental rather than hereditary, but this is yet to be definitely proved. The roots are said to be in disturbed emotional relationships in early childhood, but the precise nature of these is difficult to determine. Many diverse theories have been proposed. However, most agree that sadism in a broad sense, is contributary. This may occur from actual absence of a mother or mother-figure for long periods or from poor mothering in the form of neglect, lack of affection, repeated interference with freedom of action, and creation of an atmosphere of blame and anxiety without allowing relief of tension and anxiety. The child comes to believe that he is a *bad* child. He feels insecure, inadequate, guilty, rejected and fearful, but does not altogether accept this and so develops much hate and aggression which he cannot adequately express. Since the world appears a hostile place to the growing child, he withdraws, trusts no one, and tends to become lonely, unhappy, brooding, suspicious, secretive, solitary and obstinate. He can find neither identity, nor confidence. Since he cannot see things from another person's perspective he is always being hurt and humiliated, is incompetent in everyday situations, is always misunderstanding, misinterpreting, and is pursued by ideas of self-reference. In short he is a very self-centred being who cannot properly test reality. Consequently the paranoid is apt to become hypochondriacal, feeling that his body also is inferior.

Mechanisms

These are *denials* of elements in the person's own personality, and *projection* of these same elements outside the person. In the paranoid, repression of unconscious conflicts is abnormally weak, therefore, rationalizations in the form of delusions are constructed to make it intellectually plausible and acceptable.

Denial of homosexuality was stressed by Freud, but unmanageable hostility and responsibility for failure are also foisted onto others. Freud interpreted the "I hate him" as a denial of "I love him". To make this acceptable it is changed into "He hates me, he persecutes me, therefore I am justified in hating him".

Pathogenesis

The paranoid is hostile because he feels surrounded by hostility, not recognizing it as his own. He is extremely self-righteous and creates about him an atmosphere of tension and uneasiness which further isolates him from others. He has an excessive need for love but cannot find it. He is ever alert and hypersensitive to real or imagined threats of a sexual nature, of bodily harm, or of danger to freedom, reputation, or security. Usually he expects the worst of others, exaggerating their relatively normal minimal hostile trends.

A delicate balance is set up in the paranoid personality and a reactive rigidity maintains it. He may appear self-sufficient, confident, opinionated, argumentative, and insistent, but this really hides an inability to admit weaknesses, mistakes, or failures, with equanimity. The paranoid in a position of authority is apt to be a petty tyrant. Some are able to compensate effectively, especially if they are successful in their enterprise, or can sublimate in socially acceptable ways such as in crusades against crime, sexuality, and the like.

The precipitation of a psychotic episode occurs when, under stress, repression is not adequate and the paranoid reacts the only way he can, with an upsurge of his habitual projection. This makes the world seem increasingly malevolent. External events such as increased demands, threats of loss of status or security, rivalry even with success, competitive situations, being with like-sexed people for long periods, actual defeats or humiliations, a death or desertion, physical disability, or normal aging may tip the delicate balance. At some point the tendencies towards suspicion, blame of others, and self reference become frank delusions of a more obvious nature. The onset may appear to occur suddenly or slowly. The development has undoubtedly been long and insidious, but one final stress may be the last straw, and the onset appears to be acute.

The patient first withdraws from and loses interest in his environment. He is filled with anxiety from the threatened breakthrough of repudiated impulses. At this stage he is bewildered, partially regressed, becomes excessively self-centered, and thinks that everything he sees has some special significance for him. The more he watches for signs the more uneasy and puzzled he becomes.

A hypothesis must be found for these mysterious occurrences. Since the projected fears are an integral part of the defense mechanism, they cannot be discarded. A new "reality" is constructed to explain why objects seem misplaced, or why people on the street appear to be talking about him behind his back. The patient feels he is being singled out in a world full of diffuse peril.

At this stage he may try to communicate his fears to someone, and is almost inevitably met with rebuff, which adds fuel to the fire. Then the projections acquire a focus. *They* who are persecuting him become a pseudo-community of real and imaginary people who are united to do frightful things to him. The pseudo-community may consist of gangsters, spies in true cloak and dagger style, or of a racial or religious group.

This phase is a restitutional one, but is inadequate, because it is delusional. The patient will say "Everything is clear to me now". The unknown danger has become specific and real to him, but the "known" danger may become unbearably threatening and more and more phenomena are distorted and misrepresented.

The psychosis may take a number of forms. The patient may become morose and resentful of everything, but concealing the full extent of his delusions. Others may exhibit hostile accusations such as the litigious type who is perennially initiating legal action against people to redress supposed wrongs. Some are driven to suicide, others to attack the imagined enemy.

The exalted type has delusions of grandeur taking form in ideas of invention, or of noble birth, or of special religious significance such as believing he is Christ, or a chosen one. Other types encountered are those with delusional jealousy, or with erotic delusions. Folie à deux involves two people, one the paranoid, and the other a dependent person who is taken in by the delusions.

Summary

The causes of paranoid reactions are believed to lie in cruelty or neglect in early childhood, leading to distrust and withdrawal. The mechanism is that of denial and projection of unconscious unacceptable impulses coupled with defective repression. Repression becomes even weaker, and denial and projection stronger until the projected material, or delusions, become intensely real.

ACKNOWLEDGEMENT

The author wishes to thank Dr. D. B. Coates for constructive criticism of this article.

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Recent Advances

I.D.U. — A VIRAL ANTIBIOTIC

Herpes simplex keratitis is the most important corneal disease leading to loss of vision in North America. A recent review indicates that spontaneous clearing of herpetic lesions within a reasonable period of time does *not* occur in more than 10% of cases. Present therapy consists primarily of removal of an infected, ulcerated area of corneal epithelium. Although this sometimes speeds healing it does not always prevent progression of the disease, nor is it effective when deeper layers of the cornea are involved. A new approach to its management is clearly necessary.

Until late 1961 specific chemotherapy was never successful in the treatment of viral diseases, other than for the large viruses (Chlamydozoaceae) which are sensitive to broad spectrum antibiotics. In 1959 Prusoff showed I.D.U. (5-iodo-2'-deoxyuridine) to be a metabolic antagonist of thymidine in the synthesis of D.N.A. Subsequently, (1961) it was shown to inhibit herpes simplex and vaccinial viruses in tissue culture and in 1962 it was successfully employed as a therapeutic agent in treatment of human corneal dendritic ulcers. This even marked the first occasion in which a *specific* chemotherapeutic agent was used to cure a "true" viral disease. Many substances such as specific antibody, interferon, and various antimetabolites have been shown to prevent or modify viral disease when administered *before* the disease is manifest. I.D.U. is the first agent to ameliorate and cure even when the disease is far advanced.

I.D.U. is an analogue of thymidine, differing only in having an iodine in place of a methyl in the C-5 position. After herpes infection, the most striking biochemical abnormality of the cell is a prompt increase in cellular D.N.A. concentration. With the increased need for thymidine for virus synthesis, this analogue, either by *competitively inhibiting* the uptake of thymidine (the invitro antiviral effects of I.D.U. are reversed by thymidine in the medium), or by being incorporated itself into an abnormal, non-infectious D.N.A., may thwart production of infectious virus particles. This results in clinical improvement and eradication of infection.

What of the possibility of interference with *normal* cell metabolism? Many antimetabolites and antimitotics are abandoned because of their depressive effect on rapidly proliferating normal tissues such as bone marrow. However, I.D.U. is rapidly metabolized when administered systemically such that within four hours of an I.V.-administered dose of I-131 labelled I.D.U., 75% of the iodine appears in the urine. This does *not* detract from the antiviral potency when applied topically. The eye is accessible to topical therapy and the cornea being avascular is very sensitive to antimetabolite drugs. Rabbit studies indicate rapid healing of corneal grafts and stromal wounds even when I.D.U. therapy is continued suggesting a selective action of I.D.U. on infected cells, leaving normal cells unaffected. It is likely that the nucleic acid production system of a virus-infected cell is quantitatively and qualitatively different than that of a normal cell and is therefore subject to therapeutic agents which are more or less selective. I.D.U. has also been found to have a selective action on the virus polymerase system responsible for assembling the basic subunits of virus D.N.A.

As mentioned above dendritic corneal ulcers are especially serious because of their refractoriness to any form of treatment (except I.D.U.) and their marked tendency to recurrence. Untreated cases rarely heal spontaneously and often progress to blindness. In treating with I.D.U., the best method of application, the most effective concentration and the frequency of application have yet to be determined. At present the regimen is two drops of "Stoxil" (0.1% solution of I.D.U.) every two hours until the ulcer is cured, (usually within three to four days), and then every two hours during the day and once at night for ten days to prevent recurrence. The results of treatment have been striking. In a series of the patients with dendritic ulceration of the cornea a typical healing pattern is established. From the inception of treatment there is no further extension of the dendrictic figure. Within twelve to twenty-four hours there was marked subjective relief and within twenty-four to seventy-two hours there was marked healing of the corneal epithelium. In cases with severe geographic ulcers associated with iritis, healing occurred within thirteen days (the iritis disappeared shortly after the corneal lesions). However, herpetic iritis alone was not helped by I.D.U. In some of these cases the combination of I.D.U. (to protect the cornea) and cortisone resulted in complete cure.

More important than being an agent effective against this serious ocular disease is the fact that I.D.U. is the first specific chemotherapeutic agent effective against a "true" viral disease in animals or man, and thereby paves the way to more and better antiviral agents.

H. Tanzer 6T4

The Dream: A Key

Paul Vereshack B.A. 6T3

The author, with a 'dynamic' outlook, tries to show using examples, that dreams fulfill certain needs and as such form clues to human thought and behaviour.

As each human being passes through childhood into adult life, a series of dynamic changes take place within him on a level that is largely well beyond the reach of his day to day thought in a part of the mind we now call the unconscious. The study of these tensions and their resolution, is properly speaking the study of psychoanalysis, and it is not necessary for us to pursue it here. It is however important for us to realize that these tensions do exist, and to appreciate that deep within us there lie wishes and desires that are hidden from our conscious mind in order to prevent us from having to face material so charged with emotional power that we are totally unable to accept it unless it is shown to us slowly over a great period of time.

This concept of the duality of the mind (the conscious and the unconscious) only came into being near the end of the last century. Today, some sixty years later it forms the basis of understanding of human behaviour. It was in 1899 that Sigmund Freud's book, *The Interpretation of Dreams* was published, and it was this work that lifted thought out of the darkness and into the light as far as the understanding of the human mind was concerned. Even today one can do no better than to begin the study of human behaviour by reading this book.

Dynamic Thought Processes

Day to day thought and behaviour are the product of needs, within a mind that is capable of organising images and thoughts that are consistent with reality. The need may be a simple one such as a pure hunger for food. The conscious wish may emerge as a desire for a sandwich. This image coincides well with the reality of the situation. The sandwich is easily procured and the need may be discharged by simply buying and eating one. Life however is not always that simple. To demonstrate how a need may be repressed and not emerge at all, let us take an extreme situation where the realities we observe become such a powerful deterrent to our fulfilment that the solution to problem may not occur to us at all; even though it be quite obvious.

Consider five men in a lifeboat without food or water for two weeks. Surely it is obvious that if one of the men wishes to sacrifice himself, the others may kill him, eat his flesh, and drink his blood, thus perhaps preserving their own lives until rescue comes. In this case the need is great and yet the sense of what is right and decent is even greater and the wish may never emerge. If it did the pain of contemplating such an act would be so considerable that we might well wish we had never thought of it in the first place.

Tensions and frustrations as powerful as these seldom occur in our lives from day to day, but we would be sadly remiss if we assumed that none occur at all. Indeed, all our lives from day to day we are overcoming obstacles and frustrations, but we function in a manner consistent with what the real world demands.

Dreams

We have now arrived at the crux of the problem of dreams, for it is about the question of reality that our understanding of dream life revolves. The mechanism that directs our thoughts along channels acceptable to us is called, the censor. It works by day and by night to guard us from the emotionally charged material we spoke of earlier.

Two crucial factors become changed for us when we sleep and dream. First, the *reality* that we must face in the day time physical world becomes in large part insignificant. We will not be hurt if we fly, or breathe underwater, or leap off bridges. There are however limits to our sleeping thoughts which are imposed from a different quarter, as we shall see.

The second thing that changes for us in a dream is what Freud felt was a mechanism inherent in the sleeping state. He felt that the censor so rigid in the day time relaxed partially at night so that those powerful desires within us that are buried by day might show themselves. Even at night however, we can not face them with impunity and the censorship acts accordingly to disguise them. It is the *disguising* of our

wishes at night during sleep that is called, the dream work.

The images and memories of a life time may be woven in the dream by our unconscious needs to release the tensions that are within us. They must do so however without causing us the overwhelming anxiety we would experience if we recognised them for what they were. Accordingly, it is the work of the dream to release inner tensions by disguising them to prevent anxiety. In short, the dream is the disguised fulfilment of an unconscious wish.

The dream is bizarre in nature, but why should it not be for since the day to day realities no longer exist, thought does not have to adhere to them. The dream is difficult to interpret, to understand, and to remember, but knowing that the whole point of the dream is the disguise of the wish we see that these things only serve to enhance the purpose and not to destroy it. In no other way could the release of tension be secured without showing us thoughts that we could not tolerate.

The dream exists on two major levels. The first is the one that we see and partially remember. It seems to be a chaotic nonsensical stringing together of unrelated thoughts and images. This is called the manifest dream content and is the part that gives rise to such confusion. The second level is composed of the wish or wishes that are seeking expression and these are called the latent dream content.

How the latent dream content becomes organized into the manifest dream content is by virtue of a series of transformations at which we shall take a quick look. The three transformations in the dream work that we shall consider are, condensation, displacement, and symbolism.

Condensation disguises the wish by allowing much important material to be presented using only a few images or associations. In a dream a character might appear who upon some reflection we find reminds us of the hero in a novel we have read. Many of the hero's problems may with validity be assumed to belong to the character within the dream. For example we may dream for an instant of the character Hamlet, and thus bring within the framework of the latent dream content all the desires and frustrations of this fictional person's life, and indeed find that they belong as much to us as to him. In this way, vast amounts of unconscious material can be presented in the dream through an image which lasts only a moment in the actual dream sequence.

The mechanism of *displacement* is the one that really allows an almost impenetrable disguise to be set up. In this case an emotional component may find expression not through the appearance of that with which it is really connected but rather through a substitute image or thought. Let us say for example that the patient has an overwhelming hatred in real life for a brother who has perhaps treated him unjustly. Rather than acknowledge this fact in the dream he will disguise it by displacing his hatred onto something less threatening. He may have a fight in the dream with a stranger and kill him, but careful reflection will reveal some connecting link between the image in the dream (the stranger) and the brother who is the real object of the hatred. The stranger may for example be wearing a red jacket which reminds the patient of one worn by his brother long ago. Again the wish has made its way to the surface through a series of images and thoughts which have great meaning but are well enough disguised to save the dreamer the pain of admitting what really exists in the depths of his mind. The wish has in short displaced its psychic energy onto a less threatening image.

The last mechanism conspiring to distort dreams and render them unintelligible that we shall discuss here, is the mechanism of *symbolism*. As we mentioned earlier, the mind has the ability to give its needs substance by clothing them with images that we can understand and act upon. The previous example was that hunger produces the thought of a sandwich. The point we shall make here is that if sandwiches were taboo in this society, and yet objects of great desire, and if all those who ate them were made objects of scorn, then when the need for a sandwich arose within us, we would disguise it and find ourselves thinking instead of crackers and cheese. Let us become more practical.

A young girl finds herself bound hand and foot to the care of a mother who has been chronically ill for years. The daughter's sense of loyalty and of what is decent under the circumstances, keeps her within the home looking after the invalid, and yet she longs for freedom with every unconscious fibre of her being. She, being strictly brought up within the confines of what is taught to her as her duty cannot allow these desires to enter her daily thoughts. Are we surprised then to find the Statue of Liberty in her dreams? We are not for it is the symbol of her desire for freedom.

Before analysing a sample dream we must say a few words about anxiety in dreams. If the dream is truly the fulfilment of a wish how do we explain the incredible fear and terrifying events that sometimes occur in dream life. Surely a nightmare is a strange way to fulfill a wish.

The explanation lies in the fact that a nightmare is the result of an imperfect disguise. It is becoming too simple for the mind to interpret the real meaning behind the disguise, and the overwhelming anxiety that the dream sought to avoid in the first place springs forth. Those who find it hard to believe that powerful fears lurk even in the so called healthy mind have only to refer to one of their own nightmares.

A Sample Dream

Now armed with a few of the elements of the dream work, perhaps we can analyse a dream and turn chaos into order. The following is the hypothetical dream of the young woman we considered earlier. She is the one who brought up within the rigid code of parental loyalty, and forced to take care of an ailing mother, consults a psychiatrist because of a newly developed and powerful sense of anxiety.

> *"I dream that I am sitting in a lifeboat in the large lagoon of a tropical island . . . . I sense that even in this isolated paradise some tall buildings stand on the farthest shore . . . . as I look at them I become filled with anxiety."*

The actual office techniques used in overcoming the patient's initial inability to relate the dream events to her real problems are well beyond the scope of this article. We may say in passing however that the patient is asked to think of the dream and allow her mind to wander freely over the associations which occur to her, leaving out nothing, regardless of how seemingly inconsequential or far-fetched it may be. Retracing the mental links that have been forged, from association to association in this way, and overcoming much resistance in the form of forgetfulness and anxiety, the dream is gradually unravelled.

In this case the patient tells us she feels that a city stands on the far shore and that the height of the buildings makes her think of New York. The lagoon in fact where she finds herself seems on further thought more like a harbour than a tropical cove and the buildings at the waters edge make her think of New York. Finally she senses that something is standing in the water. After some time and effort we bring forth the full series of associations and they run something like this.

The patient is sitting in a lifeboat in New York harbour with the tall buildings at the water's edge and the Statue of Liberty standing near by. The patient may admit that the Statue represents the freedom she longs for, but has never allowed herself to contemplate. It is also reasonable that the dream work has placed her in a lifeboat, for this is the symbol of the freedom of the sea and the men who sail it; men in fact who she unconsciously wishes to set her free from the unhappy life at home.

The mechanism of condensation is seen here compressing all the patient's desires and longings for freedom onto a half remembered glimpse of the Statue of Liberty.

The mechanism of displacement renders the dream extremely difficult to interpret by placing the patient in a tropical lagoon hence removing her from the place where real insight might occur. This mechanism also displaces her desire for a man onto her position in the boat, one which is normally associated with men.

Symbolism can be seen in the statue, representing her freedom and again in the form of the boat which in reality is the man she wishes to find.

Anxiety only occurs when she glimpses the buildings on the shore and begins to appreciate the much closer relationship between the disguise and the real meaning of the harbour in the dream. It brings the wish too close to interpretation for comfort.

Waking Behaviour

Earlier on we decided that dreams differ from real life in that the reality that we must obey in day to day life no longer influences our thoughts in the same way during sleep. Waking behaviour does in fact spring from the same deep wells but the censor must exert a much more rigid control or else we should kill when angered, steal when coveting and never succeed in building a civilization by molding our desires into a form that is consistent with it.

With the knowledge we have gained we can see that all thought and action is a compromise formation between the basic wish and the reasonable execution of it, according to what we believe is acceptable. Let the desires become too strong or the censorship too weak and we begin a disintegration that leads to both minor and major mental collapse. This ranges from the various types of neuroses on through to the psychoses with all their florid behaviour and thought. We may emphasize the importance of what we have discussed by relating some of the theory to a small segment of mental disease.

Whenever we act inappropriately in day to day life we are now in a position to interpret that behaviour and delve beneath the disguise we present to ourselves and to others in order to find the underlying motivation.

We should now understand that it may lie far afield of what we see on the surface. The overly stern father, the dreadfully shy young woman and all the minor variations we see about us every day are excellent examples of the deviation between what we now know as the basic wish and what we see as the overt behaviour. Perhaps we can begin to see that we often live in our behaviour as though we were acting out the manifest content of a dream, giving play through disguised actions to the desires and fears that we must hide from ourselves lest they make us too anxious. Let us go further in our application and turn to the obsessive compulsive neurosis to see how we may apply our theories.

Consider the man who must wash his hands twenty times a day. Is there not a similarity between these actions and the type of thing we have seen in a dream? In this case the man might be the one who hated his brother enough to want to kill him and to keep the thought buried washes himself clean of the guilt twenty times a day. The manifest life he leads disguises the underlying tension, by saying, "You see, I am clean, and hence not guilty of the thoughts which well up within me." Here the years of hatred have been condensed onto the simple act of washing and the desire for absolution of guilt has become displaced onto the act of cleaning oneself. The mechanism of symbolism emerges as we see in fact that the whole act symbolizes an attempt to remove the guilt from a thought that lies buried in the unconscious.

Considering for a moment the psychoses we might view the loss of contact with reality and the emergence of bizarre behaviour with a broader view than before. Could it be that the censorship has broken down and our unconscious life is showing through just as it does in dreams. Could we once again be viewing the manifest content come to the surface?

Conclusion

In the past few pages we have not attempted to present Freud's theory of dreams in its totality for this would require very many pages. What we have hoped to accomplish is to make the doctor of tomorrow aware that psychiatric thought has much more to offer than is generally recognised and to show that the study of the mind in normal and pathological states may be deeply rewarding. Mental illness is well within the realms of human understanding.

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Abstract

Carcinoma of the bronchus and Cushings Disease.
Lancet No. 7255, Vol. 11, 1962, 5 Sept.

Several cases of bronchogenic carcinoma complicated by Cushings disease are reviewed and reference is made to similar cases in past literature. The etiology of the concomitant Cushings disease is obscure. Three possible mechanisms are mentioned:

1. pituitary-hypothalamic overactivity, causing both a) corticotrophin acting directly on the adrenal cortex; b) a hormone acting directly on the bronchus.

2. bronchogenic carcinoma causing adrenal hyperactivity by secreting corticotrophin or by mechanical stimulation of the adrenal cortex or pituitary by metastases.

3. adrenal hyperactivity causing extra-adrenal malignancy. The fact that the bronchogenic Carcinoma and the Cushings disease usually appear simultaneously lends support to hypothesis number one. The course of the illness is usually rapid, with death occuring within 6 months.

F.L.

Alcohol and Human Behaviour

J. R. Taylor 6T3

The author discusses the effects of alcohol ingestion, defines alcoholism, and describes the various clinical states seen in the chronic drinker.

The use of alcoholic beverages in varying degrees from the teetotaller to the addict has been common for centuries on end. The resultant effects on behaviour, personality and social state as exhibited by individuals almost the world over have been observed and recorded for years. That alcohol can effect a breakdown in living cannot be denied, but restoration of some semblance of normality is possible in some instances.

Space permits but a brief consideration of some of the aspects of alcoholism and its effects on man as manifest by his altered behaviour patterns. For a fuller understanding of this topic, due consideration should be given to some of the historical features of the problem, the pharmacology and physiology of alcohol, and the sociological implications involved.

Today, the result of excessive alcohol intake is a problem on the doorstep of men in various fields including psychiatrists, psychologists, physiologists, general practitioners, magistrates, social workers and clergymen. Such interest and concern as shown by representatives in these spheres indicates clearly the all-embracing effects that alcohol may have on the individual. But still they search for some means of curbing the immoderate use of it; still they seek for a definite cure; and still, they seem to have found none.

Ingestion of Alcohol

Rare is the man who has not experienced the effects of alcohol or been witness to them. In Purves-Stewart's description of the effects of alcohol on man,[6] a drunken person is one who has taken alcohol in sufficient quantity to poison the central nervous system, producing a temporary disorder of the faculties. This poisoning of the central nervous system demonstrates the anesthetizing action of alcohol (alcohol does *not* stimulate *per se*.) It is similar to that of ether and chloroform, both universal anesthetics, in that it affects first judgement, the capacity for discrimination, and ethical values. It is the universal "self-medication" for the alleviation of pain and anxiety. Once the alcohol becomes a part of the circulatory system and its effects are felt, the imbiber becomes sociable, and his worries fall off like a garment.[20] The solemn man unbends, the critical becomes charitable and sympathetic, and the silent loquacious. Alcohol tends to diminish a man's highest powers of performance and expression. Dovenmuekle[5] states that most people who drink alcohol do so not because of the flavor or for any beneficial medicinal effects on the body but for the relief of tension. Once this tension has been relieved, then natural ease becomes primary, business secondary.[6] The burden of cares and fears is eased and any feelings of inferiority or weakness that might be present are suppressed. In fact, alcohol facilitates pleasurable expression of feelings about which the individual would normally feel uneasy. The sense of values is thrown out of proportion, and according to Miles there is an agreeable distortion of both inner and outer conditions.[6]

As the nervous system becomes further anesthetized by the increasing concentration of alcohol, the effectiveness of intellectual power and perception declines progressively. The strength of inhibitions and memory weakens and control of speech and muscular co-ordination diminishes. Sensitivity to ordinary external stimuli declines and stupor and general insensitivity ensue.[13] In reality, it can be said that alcohol is an irregularly descending depressant of the central nervous system. One of the characteristic psychologic after-effects of alcohol stems from the fact that the person may have memory of what happened during the period of intoxication, and at the same time experiences a return of his moral faculties. This often gives rise to unpleasant feelings of foolishness, remorse and guilt. As a follow-up there are the usual resolves and promises which may, or may not, have the desired effect.

ALCOHOLISM

Our main interest in this presentation is in the seemingly perpetual inebriated state in which many individuals (estimated 200,000 in Canada) find themselves existing, and for many, just existing — this being the state of the chronic alcoholic or alcohol addict.

The *ways* of alcoholic intoxication are likely as

numerous and varied as the number of individuals gripped with the problem. Many suggestions have been offered by as many authors as to possible contributory personality or situational factors. Ruprecht[17] suggests that alcoholics find trouble dealing with some of their feelings, and that many of them are unaware of the emotion troubling them. McCord[14] states that in most instances, the patient has had a deprived childhood with parental rejection a major feature. Heavy, uncontrollable and persistent drinking arises from a basic personality disorder according to McCarthy.[12] Hoover[8] says that the alcoholic is in many ways the same type of dependent, anxious, hostile, symptom-laden person as the neurotic or hypochondriac. Bell[4] claims that alcohol enhances and facilitates the search for pleasure, offering relief from distress and tension, with the result of producing a temporary shift towards pleasure on the "pain-to-pleasure" scale. Various psychological classifications have been offered in an attempt to sort out the kinds of people who have become seriously involved in alcohol problems. Studies by sociologists and anthropologists aimed at finding the prototype of the addiction-prone person have failed to indicate a particular personality type or social group involved. Additional factors such as the pressure of vocational or social obligations, the weight of financial burdens, and the stress of responsibilities in the home all may play their part in the susceptible individual.

Pfeffer, in *Alcoholism as a Medical Problem* suggests that there is a definite *pleasure principle* behind much of the drinking of alcohol today and this is no new concept to most people. He points out that one drinks to feel well. This feeling of well-being seems to permit the release of pent-up emotions and aids in obliterating problems (even though superficially, and in some instances with a negative effect.) The spirit of the age proclaims that we must be efficient. Efficiency and ever more efficiency is demanded and the desire for alcohol is the desire for rest, for release from tension, for freedom and abandonment.[6] Here, though, the overdose of the "cure" can in itself, prove to be a disease.

Apparently no one specific personality type falls prey to alcohol, nor is there any consistent precipitating factor, though often certain contributing factors seem common to many. Alcoholism attacks without any regard to either ability or social status.[17] It seems then, that no one is necessarily immune to succumbing to the grip of alcohol if the suitable precipitating factors are present, but for "abnormal and unstable personalities, notwithstanding that they may have thought of it as the most divinely beneficient thing in the world, alcohol has been and still is a veritable millstone."[6]

Definition

The World Health Organization defines alcoholism as drinking that interferes with health, work, or personal relations. The scope of such a definition is alarming even to the abstainer or occasional drinker. More specific limitations have been placed on this condition by various writers. Pfeffer of the New York University School of Medicine defines it as being a chronic disease based on a complicated etiology involving psychological, social, and physical factors, which if not arrested, progresses to further serious involvement of the organism at all levels of integration.[12] Rea describes alcoholics as a particular class of people whose drinking habits have become impulsive. They drink not simply because they want to, but because they must.[16]

Various authors have attempted to classify alcoholism, but Jellinek[9] after a survey discusses it as a *genus* with many *species* with only two factors in common, namely *drinking* and the *damage resulting* from it. In setting up his five most common species, he considers the importance of 1) various degrees of physiological and psychological vulnerability, 2) sociocultural factors, and 3) economic factors.

With the *alpha* alcoholic there is no physiological dependence, but he considers him to be one with a high emotional vulnerability requiring symptommatic relief. The *beta* species consumes alcohol according to a pattern (for example, a culturally determined heavy weekend drinking) and he may demonstrate physical changes due to frequent intake. With the *gamma* type, there is some physiological change taking place and loss of control is seen with the onset of drinking, even though there is some ability to abstain entirely. In *delta* alcoholism there is physical dependence, although at a late stage psychological dependence could develop as well. Here, the chance of there being some physical deterioration is greater than with the others, and a withdrawal syndrome is precipitated on deprivation of alcohol. Knowledge of the *epsilon* species of alcoholism is too scant to permit rating and delimitation.

We choose to use the term addiction in this presentation if for no other reason than the force of the connotation it carries in our society today. In fact, alcohol becomes an agent in addiction by fulfilling the chemical properties outlined by Bell:[4] 1) It is capable of producing a welcome effect and continues to do so in toxic quantities. 2) It is sufficiently low in toxicity to permit harmful dependence to develop with psychological and/or physiological adaption to toxic doses of the chemical, and 3) It is capable of repeated, easy, self-administration. Ethyl alcohol fulfills these criteria. Kruse[12] states that alcoholism may be regarded as an addiction as evidenced by loss of control

over its use, change in tolerance, a withdrawal syndrome, and the relinquishing of all other interests in favour of a preoccupation with the use of alcohol. Jellinek has outlined the various phases of alcohol addiction and their key symptoms.

Prodromal	Crucial	Chronic
Memory blackouts	*Loss of control	*Benders
	Eye openers	Tremors
Sneaking drinks	Alibi system	Protecting supply
	Changing the pattern	Unreasonable
Gulping drinks	Antisocial behaviour	resentments
	Loss of friends	Nameless fears
	Loss of job	Collapse of alibis
	Medical first aid	Surrender

* represents transition from one phase to the next.

Table 1. Key Symptoms in the Three Phases of Alcohol Addiction — *from Jellinek*[10]

The alcohol addict reaches a stage where the drinking itself is his chief problem and not the underlying precipitating factors. Once the addiction has taken hold, then the compulsion seems to come not from the unconscious conflict, if one existed, but from a physiological level. At first the alcohol fulfilled a purpose, now the man is physiologically dependent. The physiological factor of alcoholism is regarded as structural and active when the cells of the body and particularly those of the brain appear to function better in the presence of alcohol than in its absence.[12] At this stage then, it would appear for all intents and purposes to be a disease, but Rea[16] reminds us that alcoholism is a symptom of personality and not a disease *sui generis*. The alcohol itself has done *something* which now permits the individual to function adequately only under its influence. Perhaps there is some truth to the Chinese proverb: *"First the man takes a drink; then the drink takes a drink; then the drink takes the man."*[16]

EFFECTS ON THE CHRONIC DRINKER

Marked behavioural changes can be observed in the chronic alcoholic. The compilation of a list of these changes has limitations because of the different responses of different persons, and their order of occurence. Intellectually, the chronic alcoholic is often normal or above though there is noted a narrowing of interests and some loss of memory. Inevitably he gives vent to uncontrollable rages and exhibitions of brutality: He exhibits ethical degeneration along with which there is a loss of conscience or feelings of prohibition: He experiences delusions and he reveals a distinct clouding of the finer sentiments.

Of greater consequence with the alcohol addict are the more severe disturbances in behavioural patterns which tend to bring him under the care of a physician. These are usually seen in the chronic alcoholic secondary to chronic intoxication and/or malnutrition and the general physical effects involve the nervous and digestive system. The true nutritional disorders constitute under 5% of cases admitted to hospital with obvious alcoholic complications, the remainder being of non-nutritional cause mainly. The following table shows the relative incidence of the various diseases of the nervous system incident to alcoholism on admission.

Acute intoxication	21 %
Acute alcoholic tremulosis	34.6%
Tremor and transitory hallucinations	11.3%
Acute auditory hullucinations	11.3%
Typical delirium tremens	5.3%
Atypical delirious-hallucinatory states	4.1%
Nutritional diseases	3.0%
Others	18.4%

("Rum Fits" - epilepsy complicated some 12% of the various alcoholic illnesses listed above)

Table 2. Analysis of 266 Cases *from Adams & Victor*[1]

NON-NUTRITIONAL DISORDERS

Acute Inebriation.[4,7,8,12,15] In this state, the patient may present with the recognized picture of the common effects of acute intoxication, be combative, or stuporous. The figure given in Table 2 gives a false impression of the incidence of acute inebriation, for many patients similarly affected are seen on the emergency ward and not admitted to hospital. A feature to be remembered is the importance of considering alcohol in the differential diagnosis of comatose patients[18] presenting at emergency. It has been estimated that some 59% of comotose patients for admission to a general hospital are suffering from severe alcoholic intoxication. The fact must be kept in mind that the alcoholic is not immune to the many other causes of coma and a diagnosis of alcoholic coma is made only after careful exclusion.

Alcoholic Tremulosis.[7] This is considered to be by far the most common cause of admission of an alcoholic to hospital. Other terms commonly applied to this condition are "the jitters" or "shakes". Hallucinosis is found as a complication in 25% of these cases. This condition is more commonly seen in the "spree" or periodic drinker who tends to ignore the necessity of food, work and normal social relations during his "benders". All energies are bent on procuring and consuming alcohol of any kind during these periods

often lasting 3-4 weeks and more. Between such bouts a normal functioning state may be assumed. During the period of drinking, the patient notices that he becomes tremulous, especially after a short time of relative abstinence, e.g. while sleeping. These tremors are easily quieted by a couple of morning drinks. A few days later morning nausea and vomiting ensue, and these too, at first, are subdued by a few morning "eye-openers". Within a matter of a couple of weeks of survival on ethanol alone, the spree results in admission to hospital with termination of drinking being effected by a variety of reasons: lack of funds, persistent vomiting, tremor, weakness, self-disgust, hallucinations, or collapse. With 24 hours of complete cessation of alcohol intake, all of these symptoms become greatly enhanced and the patient is alert, jumpy, and easily-startled (see Fig 1), craving rest, and reflecting some symptoms of disordered sense perception such as bad dreams, distortion of familiar objects, and maybe mild auditory hallucinations. Characteristically, the tremor of this illness fluctuates widely from an almost unnoticeable form at rest, to gross, irregular tremulousness with attempted activity. Given adequate fluid, rest and sedation, the gross features of this condition usually subside in a few days, but from 10-14 days may be required to alleviate the over-alertness, uneasiness, and "shaky insides" of which the patient may complain.

Acute Auditory Hallucinations.[1,7] This condition usually affects the chronic alcoholic with the onset of hallucinations commonly being during the latter days of a spree or shortly after its termination. The feature of this condition is the auditory hallucinations, usually of a derogatory tone, which may be vivid and threatening enough to produce a paranoid picture with suicidal tendencies. Otherwise, the patient is well oriented. As a rule the hallucinosis is transitory in nature and gradually subsides over 2-3 weeks. A small percentage find that the hallucinations do not disappear, and they may develop a clinical picture not unlike schizophrenia. It is felt that perhaps one-third of those who have been diagnosed as having acute auditory hallucinations are, in reality, individuals with early schizophrenia.[11] McCurdy states that patients suffering from schizophrenia may show episodes with practically identical symptoms, although the subjects are abstainers, or the hallucinations may appear after drinking a relatively small amount of alcohol. Such facts have led some psychiatrists to think this psychosis is a psychogenic reaction liberated by alcohol; that is, so to speak, an acute schizophrenic reaction, essentially constitutional, that appears when alcohol removes the normal acting inhibitions.[20]

Delirium Tremens.[1,7,15] Perhaps the most severe and lethal complication of acute intoxication is delirium tremens. It is probably the most frequent psychosis seen in chronic alcoholics who have been drinking for a period of a decade or more[12] but it may be seen in the "spree" drinker. It is not, as many think, the final stage for the alcoholic but it can be fatal in some 15% of cases.[1] The delirium tremens does not occur generally after only one episode with alcohol, nor is it the most common consequence of abnormal drinking. It seems to affect those accustomed to 10-15 years of habitual excessive indulgence in alcohol, occurring only in some 4% of the population of heavy drinkers[11] and is more frequent in males than females.[20] The premonitory signs of delirium tremens are disturbed sleep, restlessness, irritability, and loss of desire for food; the patient consuming nothing for days, save alcohol. An injury, unrelated illness, operation, or infection tends to play an important part in indirectly bringing on an attack and occasionally anxiety concerning possible illness will precede the delirium for a few days.

The most striking featutre of the delirium is unceasing activity, often violent, which may lead to exhaustion. The tongue, face, fingers, legs, and even the entire body may tremble. The patient represents an absolute panorama of symptoms due to autonomic overactivity, disordered sense perception, confusion, and physical activity. Visual hallucinations are commonly seen and the immediate surroundings play an important part in deciding the objects, animals, etc. which are seen. In the full-blown form, severe disorientation for space, time and person is seen with misidentification and misinterpretation evident in acute forms. The delirium is benign and shortlived, ending as abruptly as it begins, and the patient falls into a deep sleep only to awaken later with no memory for the events of the delirious period. The usual duration is from 24-72 hours and the highest incidence of onset is during the first 24-96 hours after the last drink. (see Figure 1.)

Alcoholic Epilepsy.[1,12] Rum fits, as these are commonly called, are seen in alcoholics of many years duration, usually over 30 years of age. Due to their late onset, they fail to fit the idiopathic classification, and therefore must be investigated for causation. Their occurrence is related to relative or absolute abstinence, usually in the first 24-48 hours of this period for the majority. Reference to Figure 1 will show the definite time relationship between these syndromes discussed above and the conclusion is inferred that these states depend upon the effects of prolonged exposure to alcohol and on abstinence from the drug, and that they tend to occur in sequence.[1]

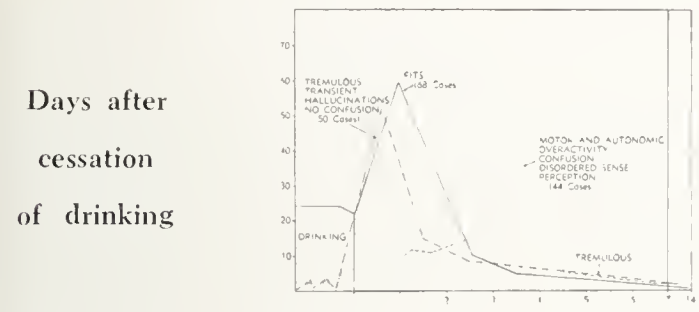
Days after cessation of drinking
TREMULOUS TRANSIENT HALLUCINATIONS NO CONFUSION, 50 Cases
FITS 68 Cases
MOTOR AND AUTONOMIC OVERACTIVITY CONFUSION DISORDERED SENSE PERCEPTION 144 Cases
DRINKING
TREMULOUS
Percentage onset in each group

Figure 1. Relation of onset of acute neurologic disturbances to cessation of drinking. From Adams & Victor.[1]

Nutritional Disorders[7,12,15,19].

Wernicke's Encephalopathy. Good evidence is offered that this condition is associated with a basic nutritional deficiency, especially that of thiamine. It characteristically has an acute onset, with the classical features being: clouding of consciousness, disturbances of oculomotor function, ataxia, and possible associated delirium.[15] This condition is not exclusive to the alcoholic as it is also seen as a complication of various malabsorptive conditions of other types (carcinoma of stomach, hyperemesis gravidarum,) and thiamine or other vitamin deficiencies.

Korsakoff's Psychosis. This is typically an amnestic, confabulatory state, with the amnestic element being very marked. Retention is very short, therefore the patient is grossly disorientated. Often other signs of nutritional deficiency such as neuropathy and cheilosis are noted. The state is usually irreversible and institutional care the usual disposition. Some workers in the field look upon Korsakoff's psychosis as the mental component of the same process that causes Wernicke's disease.[1]

Alcoholic Polyneuropathy. This pathologic process is which Thiamine deficiency plays a role is essentially a degenerative rather than an inflammatory one, and always involves multiple nerves. The student should delve into the literature for further information concerning this and the other related nutritional problems encountered in the alcohol addict.

CONCLUSION

Over and above these fairly specific problems encountered in the alcoholic, he is not immune to the many physical and emotional diseases which confront his uninebriated peers. Whether we consider the alcoholic problem as a disease of the society, a reflection of custom, or an individual entity affecting individual persons and their behaviour patterns, the practising physician will have to take conscious steps if he wishes to avoid contact with it. If he is knowledgeable of and concerned over the threat of alcohol to his fellow man and himself then a step in the right direction is achieved. Otherwise, the alcoholic may have lost his hope for escape, for ignorance and indifference make a strong team.

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*Especially recommended references for the student.

Answers to On Inspection

Questions — page 150

FIGURE 1: Paget's Disease of the Nipple.

This is a specialized form of intraductal carcinoma that arises in the main excretory ducts of the breast and extends to involve the skin of the nipple and areola. Histologically there is invasion of the epidermis by malignant cells, referred to as Paget cells, which are in reality invading neoplastic cells of the duct carcinoma.

The treatment is immediate radical mastectomy.

FIGURE 2: Xanthelasma.

Xanthomatosis is a condition characterized by the formation of small yellowish tumours, non-neoplastic in nature, of varying sizes, composed chiefly of reticuloendothelial cells and histiocytes. Cells anywhere in the reticuloendithelial system may become involved and thus there may be lesions scattered throughout the body and involving various systems. There are five types involving the skin and/or tendons: (a) tendon xanthoma (b) xanthoma tuberosum (c) xanthoma eruptivum (d) xanthoma disseminatum, and (e) xanthoma planum. The last type is usually located on the eyelids (xanthelasma), neck, chest, pelvis, and knees; in most instances there is either hyper-cholesterolemia or hyperlipemia.

FIGURE 3: Pseudoxanthoma Elasticum.

This is an extremely rare condition, which is due to a hereditary generalized weakness of collagen fibres, rendering them prone to degeneration. There are resultant changes in the skin of the neck, axillae, and inguinal areas, consisting of thickening, grooving, and formation of yellowish, diamond-shaped, rectangular nodules not unlike those of xanthomatosis; hence the name pseudoxanthoma elasticum. Other features are gray angioid streaks and cardiovascular manifestations, such as intermittent claudication, angina pectoris, and hypertension, because of early vascular calcifications.

FIGURE 4: Paget's Disease of Bone (Osteitis Deformans).

This disease is either localized or generalized, and is essentially one in which the primary lesion is bone destruction. Because of the destruction, the bone is weakened and is subjected to an increase in stress and strain; this stimulus results in increased activity of the osteoblasts with increased compensatory bone formation. The X-rays characteristically reveal areas of bone destruction followed by areas of repair.

The essential clinical features are enlargement of the head (hats getting too small), general kyphosis, bowing of the legs, and apparent lengthening of the arms which are placed on a plane anteroir to that of the body. Other less common features are headache, deafness, vertigo, and failing vision due to constriction of cranial nerves at their exit from the skull.

FIGURE 5: Letterer-Siwe Disease.

This is the acute or sub-acute disseminated variant of Histiocytosis X (see above). It is largely limited to children below the age of three, and is characterized by development of areas of proliferating cells of the reticulo-endothelial system — histiocytes (Histiocytosis), occurring chiefly in visceral organs.

Clinical manifestations are hepatomegaly, splenomegaly, lymphadenopathy, a haemorrhagic diathesis, and skin manifestations. This condition is often fatal.

FIGURE 6: Eosinophilic Granuloma.

This is a form of xanthomatosis usually unassociated with hyperlipidemia, and is included under the more general heading of Histiocytosis X. Histiocytosis X is a term applied to three conditions of the same basic etiology — eosinophilic granuloma, Hand-Schuller-Christian disease, and Letter-Siwe disease, each of which is associated with hyperplasia of the reticuloendothelial system with resultant granuloma formation, involving especially the osseous system, skin, lungs, and nervous system.

Eosinophilic granuloma is the localized benign form, most often confined to bone, but also occurring in the skin and lungs. It occurs chiefly in children, but may be found at all ages, and consists primarily of a proliferation of histiocytes and eosinophils. It is treated by local excision or curettage, or X-ray therapy.

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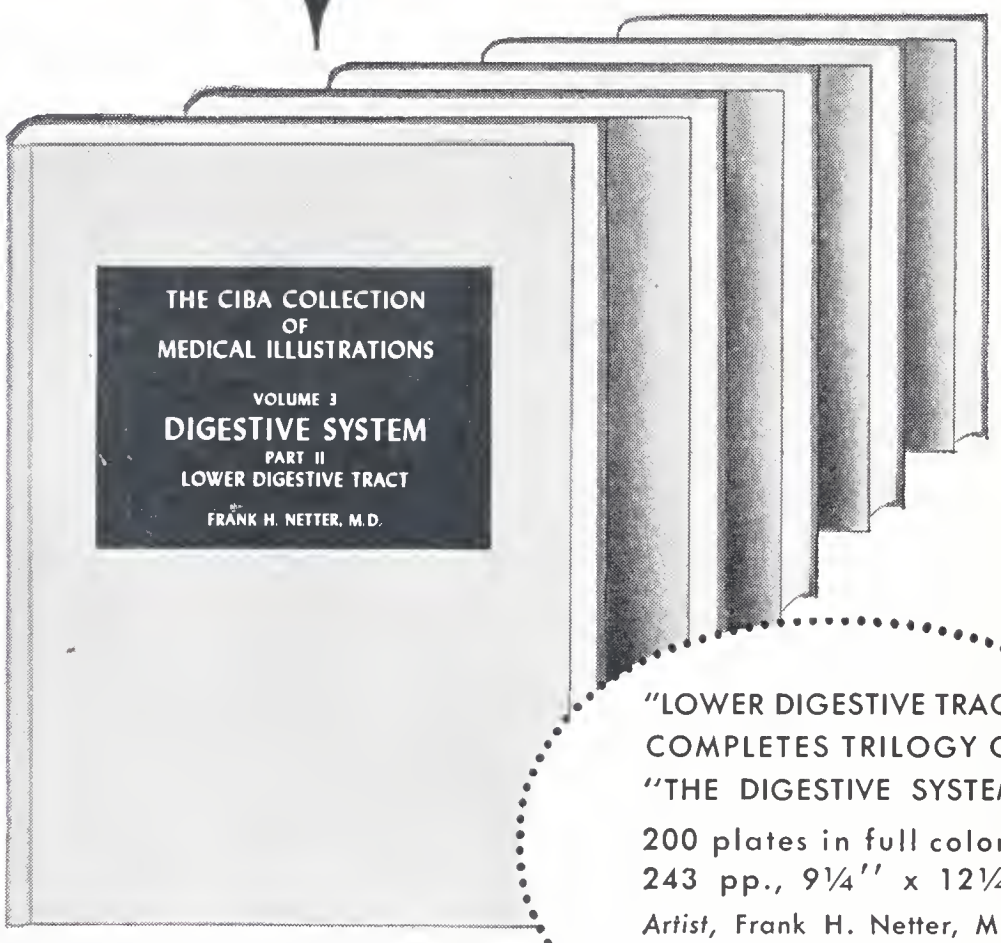

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